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AIR CONDITIONING & REFRIGERATION News

THE NEWSPAPER OF THE INDUSTRY

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INSIDE DOPE

Learn to live and laugh—
Thus delay your epitaph

By GEORGE F. TAUBENECK

Stories of the Week
Gags of the Week
Verse of the Week
Philosophy of the Week
Be of Good Cheer
How to Tell Time By the Stars
Last-Minute Quips

Stories of the Week

Prior to entering the refrigeration business, Max Posolfsky of Chicago sold "stylish stout" gowns. An innocent incident prompted him to change occupations. This letter did it:

"Dear Mr. Posolfsky: Don't bother about delivering that maternity dress I ordered from you last January. My delivery came before yours."

At an end-of-shift a steel mill foreman told his boss that he planned to get married next noon.

"Is your fiancee big, little, slender, or stylish stout?" bantered the Big Wheel.

"Boss, if I'd a had the rolling of her, I'd a given her three or four more passes. But I love her just the same."

"I didn't do nuthin wrong," protested Mrs. Sarah Brown Troutman of Wheeling, W. Va., when she was arrested.

"You shot a man daid, didn't you?"

"Well, yes. But he was only my husbin."

Three moves are more expensive than a fire," Benjamin Franklin aphorized.

Ed Grossfield can say "Amen" to that. His Chicago advertising agency expanded into new quarters. At the same time Ed changed the name of his firm from "Grossfield and Associates" to "Grossfield and Staff."

Willy-nilly, the telephone sweetheart of the Grossfield agency now explains 20 times a day that "Mr. Staff" doesn't work there.

Gags of the Week

Tact is the ability to shut your mouth before someone else does.—*Chicago Tribune.*

"I suppose," said my friend reflectively, "that one must accept Dr. Kinsey's point that women are not really frightfully interested in men. But I do think he ought to have told us why they go on pretending to be."
—*London Spectator.*

Too many necessities are the mother of tension.—*Pulpit Digest.*

Verse of the Week

Don't hunt for trouble, but look for success,
You'll find what you look for,—
don't look for distress.
If you see but your shadow, remember I pray,
That the sun is still shining, but you're in the way.

Don't grumble, don't bluster, don't dream and don't shirk;
Don't think of your worries, but think of your work.
The worries will vanish, the work will be done,
No man sees his shadow, who faces the sun.

Philosophy of the Week

If someone were to pay you ten cents for every kind word you ever spoke about people, and collect five cents for every unkind word, would you be rich or poor?

There is no truer and more abiding happiness than the knowledge that one is free to go on doing, day by day, the best work one can do. Perfect freedom is reserved for the man who lives by his own work, and in that work does what he wants to do.—R. G. COLLINGWOOD.

(Concluded on Page 7, Column 4)

Air Conditioning Gets Top Billing At ASRE Meeting

WASHINGTON, D. C.—Air conditioning was a major topic of interest for the American Society of Refrigerating Engineers during its 49th annual meeting Dec. 5 to 9 at the Shoreham hotel here.

In addition to the Air Conditioner Conference on package units for commercial and industrial applications (with frequent mention of the new residential field), ASRE focused attention on allied subjects in two symposiums, one on the heat pump, the other on water conservation.

Society business at the convention included the formal approval of the 1953 revision of the B9 Safety Code;

(More detailed reports on the papers, discussions, and panel conferences held at the ASRE annual meeting will be published in future issues.)

presentation of charters to the new Dayton, Ohio, and Louisville, Ky. sections, three awards, and the induction of new officers.

Arthur J. Hess of Los Angeles is the new ASRE president, succeeding Prof. Richard C. Jordan. Leon Buehler, Jr. is now the first vice president; Carlyle M. Ashley, second vice president; and Hermann F. Spoehrer, treasurer.

New directors are A. L. Hesselschwerdt, Jr., Rowland H. Lock, Fred P. Neff, and George K. Iwashita.

Neil E. Hopkins and John Seelaus, both of York Corp., received the Wolverine award for their paper, "Temperature Change as Affected by Different Pulldown Methods," which was named the best published in the society's magazine.

Award for the best paper presented before a section went to A. C. Pietrasanta for his paper, "Principles of Sound Control" given before the Boston section.

The Chicago trophy for the section gaining the largest percentage increase in members was won by the Carolina section.

"Best guesses from the industry [for 1953] indicate over 50,000 year-round residential air conditioning sales and over 70,000 self-contained units," declared Geo. S. Jones, Jr., managing director of Air-Conditioning and Refrigeration Institute, keynote speaker for the Air Conditioning Conference.

"At long last, the dreams of those of us who have devoted our lives in a major part to developing and dis-

(Concluded on Page 21, Column 1)

G-E Announces Prices On 1954 Room Coolers

LOUISVILLE, Ky. — Manufacturer's recommended national retail prices ranging from $449.95 to $229.95 for the 1954 line of General Electric room air conditioners have been announced by H. B. Donley, general manager of the specialty refrigeration products department.

The 1954 line, most extensive ever to be produced by the company, includes models in four sizes—1, ¾, ½, and ⅓-hp. The ¾-hp. model also is available with reverse cycle operation for heating in cool weather as well as cooling in warm weather.

Models offered, with voltage requirements and the manufacturer's recommended retail prices, are:

R-72—1 hp. (208 or 230 volts), $449.95; R-53—¾ hp. with reverse cycle (230 volts only), $419.95; R-52 — ¾ hp. (115, 208, 230 volts), $379.95; R-32 — ½ hp. (115 volts only), $319.95; R-20—⅓ hp. (115 volts only), $229.95.

Philco To Buy Dexter, Add Laundry Line

PHILADELPHIA — Philco Corp. has signed an agreement to acquire the net assets of Dexter Co., Fairfield, Iowa, manufacturer of washing machines and dryers, subject to approval of Dexter stockholders, it was announced last week by William Balderston, president of Philco, and Tom B. Hunt, president of Dexter.

Philco plans to continue operation of Dexter Co. under its present management as a separate unit. Its output of washers and dryers will be marketed under the Dexter name.

Entry into the home laundry field will round out the Philco program of major appliances, which already includes television, radio, refrigerators, freezers, air conditioners, and electric ranges.

In exchange for the plant facilities, patents, and other assets of Dexter, Philco will tender 70,000 shares of its authorized but unissued common stock, or 1.05 shares of Philco stock for three shares of Dexter stock, of which there are 200,000 shares outstanding.

(Concluded on Page 24, Column 5)

Frigidaire Shows New Range Line

DAYTON — Colorful 1954 electric ranges, including one "Imperial" model that will let the homemaker cook seven separate ways without using extra utensils or equipment, are being unveiled in 42 Frigidaire distributing organizations across the country.

Mason M. Roberts, Frigidaire's general manager and vice president of General Motors, who announced the 1954 line, said the new models will be previewed by dealers during the remainder of this month. Suggested retail cash prices range from $169.95 to $459.95.

In discussing important new Imperial range features, Roberts pointed out that the homemaker can cook a wide variety of ways—deep-fat fry,

(Concluded on Page 24, Column 1)

Norge Introduces Range Models, Laundry Equipment

CHICAGO — New 30-in. gas and electric ranges, "economy-priced" automatic washers and dryers, and redesigned conventional washers headline the 1954 Norge appliance line.

Five home freezers and water heaters in two styles and six sizes are also in the Norge line.

The 30-in. ranges have 50% wider ovens than standard ranges, the ovens being 24 in. wide, Norge said. The ranges are made in gas model G-130 and electric model E-301.

The ranges also have smokeless broilers, appliance outlets, cross-top lamps, and two removable oven racks. A "Minit-Master" timer is featured on the gas range, while the electric range has an automatic clock and storage drawers.

Both gas and electric ranges have four surface units, including two giant burners on the gas range and

(Concluded on Page 4, Column 1)

Worthington Shows '54 Air Conditioners

SEA ISLAND, Ga.—A line of completely new commercial package units, and new residential air conditioners designed to be used with a warm air heating system for year-round air conditioning, high light Worthington Corp.'s line of air conditioning products for 1954, introduced at a meeting of Worthington air conditioning equipment distributors.

In reviewing 1953 sales, Matthew M. Lawler, vice president of the company's Air Conditioning & Refrigeration Div., revealed sales of commercial package air conditioners increased 60% over 1952. The over-all sales volume for the division rose 16% over the previous year.

Lawler also told the distributors that air conditioning is the most recession-proof of industries.

The 1954 package unit has been redesigned completely, inside and out. The cabinet design presents an improved decorative beauty with a

(Concluded on Page 23, Column 1)

ARI Estimates '53 Room Units at 1,075,000

WASHINGTON, D. C.—The Air-Conditioning & Refrigeration Institute has just completed an estimate of 1953 manufacturers' shipments of room air conditioners that places total industry shipments at 1,075,000 units with a manufacturers' sales value of $210,265,000. The complete estimate follows:

*Room Air Conditioners**	*Units*	*Manufacturers' Sales Value*
Window-sill type	1,055,000	$203,615,000
Console (floor) type	20,000	6,650,000
Total	1,075,000	$210,265,000

Actual shipment data for 1952, prepared by the Bureau of the Census, are as follows:

*Room Air Conditioners**	*Units*	*Manufacturers' Sales Value*
Window-sill type	357,106	$ 67,271,000
Console (floor) type	8,345	3,608,000
Total	365,451	$ 70,879,000

*Includes shipments by all manufacturers (whether members of ARI or not) during the entire calendar year of all self-contained air conditioners of 1½ hp. and under.

Deepfreeze Introduces '54 Appliance Lines

'Aqua-Tap' Dispenser Featured In Refrigerator; 6 Models of Room Coolers

CHICAGO — A refrigerator that serves cool water or other beverages from a closed door, home freezers that store more food without occupying more floor area at no increase in cost, all-color interiors in refrigerators and top-of-line home freezers, and an introductory line of room air conditioners are among notable new features for 1954 which Deepfreeze Home Appliances has developed.

The company presented the appliance lines for its 15th anniversary year in preview showings for the press last Monday and for distributors Tuesday at the Sheraton hotel here. The new models will appear in retail stores within a few weeks.

Deepfreeze executives also disclosed new promotion plans headlined by an "unprecedented billboard campaign to blanket the nation" and a $100,000 consumer contest.

Cool drinks are dispensed from the refrigerator door by means of a unique dispenser called "Aqua-Tap," which is located near the door handle. A glass is filled by pressing it against

(Concluded on Page 2, Column 1)

Airtemp Bows '54 Room Units, Adds Casement Model

CHICAGO — Descriptions and prices of Chrysler Airtemp's 1954 "Power-Full" line of room air conditioners were revealed last week by J. F. Knoff, vice president and general sales manager of Chrysler Corp.'s Airtemp Div.

Knoff also announced that a Christmas promotion, including gift certificates, initiates the company's 1954 room air conditioner sales drive.

Addressing 300 midwest Airtemp salesmen at the Sheraton hotel, Knoff unveiled a ½-hp. room air conditioner designed especially for casement windows. Approximate measurements are 35 in. high, 16 in. wide, and 12 in. deep. The company said one man can install the unit from within a room in a few minutes.

"The casement air conditioner fits flush against the window frame, and is enclosed entirely within the room," Airtemp explained. "When not in use, the casement window can be closed and locked, with the air conditioner safely inside."

According to Knoff, the new air conditioner was designed in cooperation with the American Window In-

(Concluded on Page 4, Column 4)

P. B. Wishart Succeeds Sweatt as M-H Pres.

MINNEAPOLIS — Harold W. Sweatt, president of Minneapolis-Honeywell Regulator Co. since 1934, was recently elected chairman of the board, succeeding Mark C. Honeywell, who was named honorary chairman.

Paul B. Wishart, vice president and general manager of the company, was elected to succeed Sweatt as president.

At the same time, two other officers of the company were elected directors, enlarging the board's membership to 10. The new directors are Tom McDonald, vice president in charge of sales, and A. M. Wilson, vice president in charge of the firm's Aeronautical Div.

The top-level changes in management coincided with the retirement of five officials under the company's executive retirement plan established in 1943.

The retiring officials include, in addition to Honeywell, another executive who has been a member of Honeywell's top management since the firm was organized under it present corporate structure in 1927. He is W. L. Huff, director, executive

(Concluded on Page 23, Column 2)

INDOOR "WEATHER" is dialed by concealed controls in Imperial models of Deepfreeze room air conditioners. Shown here is the ¾-ton Imperial DRT-76. It has thermostatic temperature control and is equipped for separately controlled fresh air intake and stale air removal. No-draft air flow may be directed by adjusting louvers.

STORAGE CONVENIENCES as well as an all-color interior is inside this more than 11-cu. ft. Deepfreezer refrigerator. Near the top is a swing-out meat compartment. One shelf slides out. Special storage is provided in the door.

CLOSE-UP OF AQUA-TAP feature which dispenses chilled drinks from a closed refrigerator door makes news for Deepfreeze. To fill the tumbler, press it against the dispenser. When the tumbler is removed the beverage will stop flowing. The beverage is stored in a gallon-plus plastic container inside the door.

Deepfreeze Introduces '54 Lines--

(Concluded from Page 1)

the Aqua-Tap. When the glass is taken away, the flow stops without dripping, according to the company.

The dispenser connects with a plastic container inside the door which can hold more than a gallon of water, fruit juice, or any other desired drink, except milk. It can be refilled by lifting a hinged lid.

Deepfreeze pointed out that the Aqua-Tap lends itself to self-service for children and can be used at parties. In daily use, the tap can cut down on repeated openings of the refrigerator and thus diminish frosting and reduce electric current consumption, it was noted.

A soft-seal gasket which, like the container, is odorless and stain-resistant prevents splashing because of door movements. Readily removable, the container and dispenser can be washed with the dishes, as can a removable plastic cup under the dispenser to catch overflow.

Storage capacity of chest-type home freezers is boosted through re-engineering of liner assemblies and a slight increase in height. New chest freezers of 14-cu. ft. capacity can hold about 26 lbs. more food than preceding models of the same floor area, the company said.

All-color interiors of "Emerasheen" green are offered in all refrigerators as well as certain home freezers in the company's new lines. The new interior scheme "employs a cool but subtly rich green in several shades to provide both harmony and variation," according to the company.

Room Coolers In 6 Models

Six models of room air conditioners are being introduced by Deepfreeze to mark its entry into this appliance market.

The Aqua-Tap dispenser is one of a group of door storage conveniences offered in the exclusive "Dispensador" of the top-ranking refrigerator in the new line, the more than 11-cu. ft. "Imperial Deluxe" model A-12.

Among the door features is a removable storage bin with two separate compartments, one for cheese and the other for salad greens, small fruits and vegetables, sandwiches, or any other small items. Made of polystyrene and having a hinged lid, the bin retains moisture for cheese and provides crisper-type storage for other foods. The cheese keeper has a special humidity conditioner and is equipped with a lift-out wire rack, suitable for the table.

Other specialized storage in the Dispensador includes a butter box with temperature settings for favorite spreading consistency, a compartment for 21 eggs, and a compartment that holds up to seven full-quart bottles, individually accessible.

Meat Compartment Swings on Pivot

New storage ideas are incorporated also in the main part of the refrigerator. For example, there is a 10-lb. removable meat compartment which swings out on a pivot to offer easy selection when a hinged cover is lifted. The compartment is hung so that it automatically swings gently back into place.

Another innovation is a roll-out lower shelf which slides on nylon bearings and has a guard rim.

This Imperial model refrigerator has three shelves, gold trim at the front, and twin crispers under a full glass shelf. An "Electromatic" device defrosts automatically. Outside, the refrigerator is decorated with gold trim along a "swirl line," a new escutcheon behind the handle, and a gold-white-and-red nameplate.

A second Imperial Deluxe refrigerator, the 9.3-cu. ft. model A-10, is practically identical with the 11-cu. ft. model. Except for capacity, the main difference is that chilled beverage storage in the door is provided by two 1-qt. "Handy Jugs" instead of the Aqua-Tap. The Handy Jugs are flat glass bottles with large-handled plastic holders.

In addition to the two Imperial Deluxe models, the refrigerator line is comprised of three "Custom Deluxe" models, F-10, G-10, and G-12, which come in a lower price range.

50-Lb. Frozen Food Storage In Low-Priced Model

The lowest-priced new unit, the 9.6-cu. ft. F-10, boasts such "plus" features as frozen storage capacity for about 50 lbs. of food, a high-humidity crisper of one peck capacity, and door storage for eggs and bottles.

Pushbutton defrost, which works automatically after a button is pushed, is built into the 9.6-cu. ft. G-10, which has two and one-half aluminum shelves, a glass shelf, twin crispers, and door storage for butter, eggs, and bottles. The same door storage and three and one-half aluminum shelves are provided in the G-12, of 11.5-cu. ft. capacity, which also has a frozen storage drawer and crisper of one peck capacity.

Deepfreeze is presenting a line of six home freezers and two institutional freezers, including both chest and upright styles, with storage capacities ranging from 8 to 24 cu. ft., according to NEMA standards.

Certain chest models have a new type of "feather touch" latch, which opens with a push instead of the conventional pull. This latch permits a person with loaded arms to open the freezer with a bump of the arm.

A "floating action" lid is to be found in all chest models. It is self-adjusting and self-aligning.

Extensive new styling, outside and inside, is a keynote of the 1954 freezers. Highlights include all-color Emerasheen interiors in some models, touches of gold, chrome and stainless steel trim, and a new decorative handle treatment for chest lids. Family resemblance of Deepfreeze products is furthered with the addition on the lids of all chest freezers of the sweeping "swirl line" treatment.

Push Latch New on Freezer

One of the new chest freezers is the Imperial C-146, which has a capacity of 14 cu. ft. This model, which holds more than 476 lbs. of food, has colored interior, new push latch, and special nameplate and ornamental handle.

Storage features include adjustable divider racks, three removable wire baskets, and a three-piece aluminum casserole set in green, red, and gold. The casserole set, which rests on a rack, may be used for complete family meals—frozen, heated, and served in the same utensils.

Temperature inside the cabinet may be adjusted with a control on the front. There is also a silent signal with a white light that shines during normal operation and goes off if power fails and a red light that comes on if cabinet temperature exceeds safe storage limits. Raising the lid turns on an interior light.

In upright style freezers, Deepfreeze is spotlighting Imperial model CU-126, which holds more than 420 lbs. of food in its 12 cu. ft. but requires only 6.29 sq. ft. of floor space. It has four sub-zero shelves with extra freeze tubing in each, a sliding basket to hold more than 40 lbs. of food within easy reach in the lower section, and a door with three shelves. Also among this unit's features are colored interior, and a defroster drain.

Details of the two other Imperial model chest freezers, C-86 and C-186, tally almost exactly with those of C-146 except for size. The C-86 has a capacity of 8 cu. ft. and 268 lbs., and the double-lid C-186 is rated at 18 cu. ft. and 622 lbs.

Two chest units are offered in lower-priced Custom models. These are the 8-cu. ft. B-86 and the 14-cu. ft. B-146. Like all chest home freezers in the Deepfreeze line, these models have a shell-type condenser to keep cabinet exteriors free of condensation moisture.

Institutional Freezers Built for Heavy Duty

In heavy-duty institutional model freezers, Deepfreeze is presenting two units, the chest-type C-246 of 24-cu. ft. and 830-lb. capacity and the upright-type CU-196 of 19-cu. ft. and 651-lb. capacity. In conveniences and styling, the institutional models resemble the Imperial units, but they have the heavy-duty fin condenser, extra-power compressor, and sturdier bracing.

All six models of room air conditioners in Deepfreeze's new line will cool air, remove moisture from it, filter it, and circulate it through adjustable louvers. Imperial models, besides these functions also performed by Custom models, afford automatic temperature control and separately regulated fresh air intake and stale air exhaust. An auxiliary heating unit is optional in Imperial models.

Quiet operation is said to be assured by the fan designs of the conditioners as well as location of motors outside the window behind insulation. Exterior surfaces and interior parts exposed to moisture are rust-resistant, and a hydrolene base prevents condensation, according to the company. No motor oiling is required.

Making up the new line are the Custom DR-33 (⅓ ton), Custom DR-75 (¾ ton), Imperial DRT-76 and DRT-76-H (¾ ton), and Imperial DRT-100 and DRT-100-H (1 ton). The "H" in model numbers denotes addition of an auxiliary heating unit, of 1,500-watt or 1,750-watt rating. Imperial models have two-speed fans; custom, one-speed. Moisture removal capacity ranges up to 8 gal. a day.

The air conditioners can be installed in 60 minutes on the very day of purchase, according to the manufacturer. Each unit measures 26½ in. wide, 30 in. deep, and 16½ in. high, and projects 14 in.

All models are finished in "Nutra-tone Grey," and the Imperial models have concealed controls and gold-finish trim.

Deepfreeze is continuing its lines of electric ranges and water heaters without changes. The ranges include deluxe 40-in. models, as well as 36-in. and 21-in. units. Water heater models range in size from 30 to 81 gal., and are available in both table-top and cylinder types.

Here are the Symbols SPORLAN has made Famous!

"G" VALVE

"C" and "Z"

SELECTIVE CHARGES

No other thermostatic expansion valve designed for commercial refrigeration offers the Peak Performance of Sporlan's Famous G Valve with Selective C and Z Charges.

INTRODUCED by Sporlan to the industry in 1934, this combination has steadily forged ahead in popularity until today refrigeration men, both young and old, have made it their No. 1 choice . . . They know best what Peak Performance really means!

"C" CHARGE *for suction temperatures* above *zero.*

"Z" CHARGE *for suction temperatures* below *zero.*

plus "X" CHARGE *for extremely low temperatures.*

Buy a Sporlan "G" Valve with Selective Charges from your Wholesaler today! . . . and be sure to ask him for the Sporlan 52-C Catalog. With it you can select the proper Thermostatic Expansion Valve, Solenoid Valve and Catch-All to give that Sporlan "Right-Down-the-Line" Peak Performance!

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7525 SUSSEX AVE. ST. LOUIS 17, MO.

EXPORT DEPARTMENT

89 BROAD STREET NEW YORK 4, N. Y.

NEW FRIGIDAIRE ROOM CONDITIONERS ARM DEALERS FOR '54 SALES AND PROFITS

You really have to see the Frigidaire Silver Anniversary Line to appreciate to the fullest the breath-taking new beauty that sells on sight! There's a size and type to meet every room requirement . . . every pocketbook. There's the ⅓ hp SUPER 33, the ½ hp SUPER 50, the ¾ hp TWIN 75 and the 1 hp TWIN 100. All can be equipped with thermostat if local utility permits automatic operation. A service man can perform the job in just a matter of minutes. "Twin" models, with optional High-Flow Heat, are available for 208 and 230 volt a. c. as well as 115 volt current. All models are priced competitively, and designed from front to back to help Frigidaire Dealers get the lion's share of the room conditioner business.

Silver Anniversary Line loaded with new sales-winning features . . . new beauty and new modern styling

From their dramatic new color and styling to their new value-packed performance features, Frigidaire Room Conditioners have been specially re-designed to give dealers plus sales power in 1954.

High efficiency, supplementary heating, optional thermostat control, and many other important features can now be added to the list of such proved sales-making advantages as Great Circle Cooling and Frigidaire's exclusive Twin Cooling Systems.

They're all there, and more, in Frigidaire's wonderful new "Silver Anniversary" line. It's the line that marks the 25th year since Frigidaire developed and installed the first successful room conditioner. It's the line that pays off those 25 years' experience with units built to give customers quality and performance unsurpassed by any other room air conditioners made.

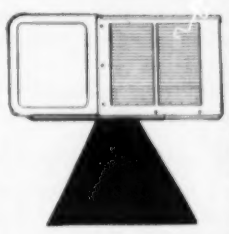
Now Heats As Well As Cools

Now dealers can sell Frigidaire Conditioners on a year 'round basis! The new Frigidaire Room Conditioners include models with High-Flow Heat for instant supplementary warmth, that is so welcome in cool, damp weather. Positive, fast-acting, the Frigidaire heating system is entirely independent of the cooling system and provides a constant, uniform flow of heat, when desired. Special automatic safety cut-off shuts off heating whenever fan stops operating.

Automatic Temperature Control

Now dealers can "sell up" to automatic comfort on every single Frigidaire model. Simple installation adds low-cost thermostat to any one of the new "Silver Anniversary" Room Air Conditioners if local utility permits automatic operation. On "Twin" models thermostat control is also available as factory-installed equipment. Here's real flexibility to meet all competition with real deluxe models.

BALANCED MOUNTING

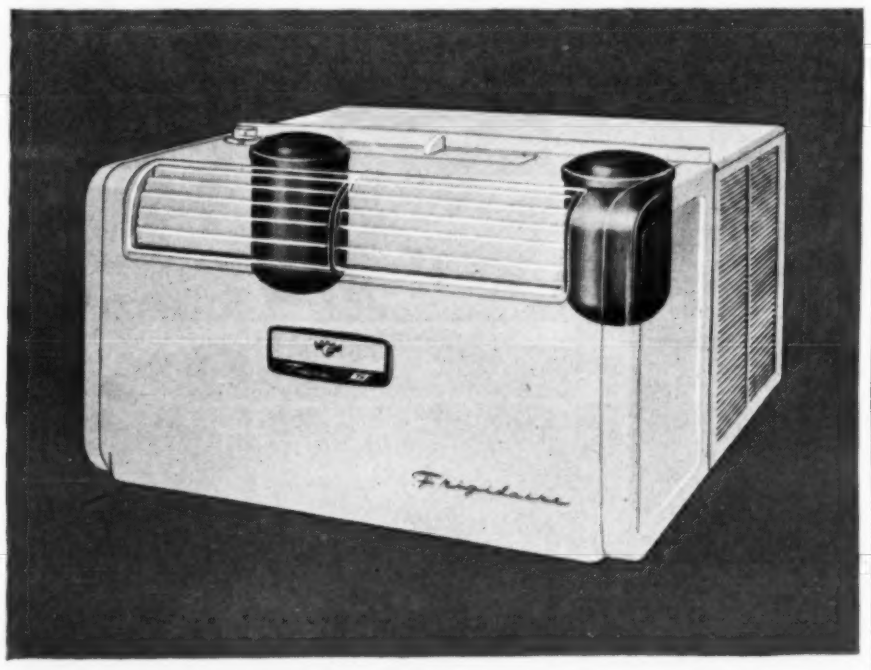


Here's the real answer to simple installation and positive comfort for customers. Proper weight centering minimizes stress and strain on walls and sills . . . eliminates vibration and need for ugly, heavy outside braces. It locates air delivery and return so that drapes, curtains and window walls can't block off air, so that all the cooling power developed by the Meter-Miser is used . . . so all cooled air circulates smoothly and evenly throughout the room.

Super Silent Operation

Now, more than ever, Frigidaire stands out as *the* quiet room conditioner—a sales fact that is becoming more and more important to customers. Centrifugal-type fan, effective elimination of vibration, and extra-heavy acoustical insulation, combine to make these units whisper-quiet.

The outstanding economy story in the industry— "Twin Powered to save up to ½ the operating cost!"



Frigidaire and Frigidaire alone puts two Meter-Miser compressors, two separate cooling systems, in its TWIN models, to provide truly exclusive economy and flexibility. Just *one* cooling system operates in moderate weather for complete cooling, dehumidifying, filtering, circulation, and ventilation at half the electric bill. *Both* cooling systems team up to double cooling power economically when temperatures soar. It's just like having two room air conditioners for the price of one. No risk of over-cooling on mild days. No risk of under-cooling in hottest weather. Only Frigidaire Twin Models tune refrigeration capacity to weather changes so effectively. Unlike many other room air conditioners, there's no wasteful heating of refrigerant; no bringing in of extra hot, humid air, no slowing down of fan speed.

Meter-Miser Powered

And, of course, all models are powered by the Frigidaire Meter-Miser, simplest cold-making mechanism ever built, famous the world over for economy and dependability. It's the same type of wonderful compressor that's in millions of Frigidaire refrigerators. Every Meter-Miser is warranted for 5 years.

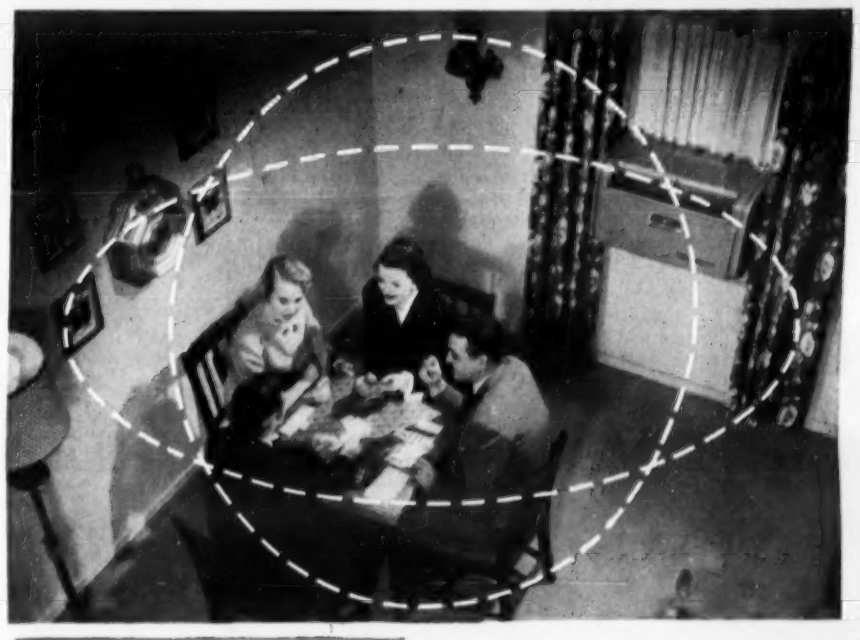
GIANT FULL-WIDTH, FULL-HEIGHT FILTER

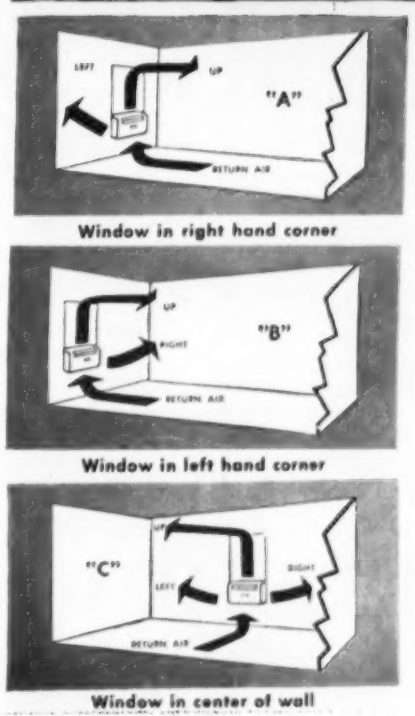
No handkerchief-size filter here to clog up quickly and bog down cooling efficiency. The huge Frigidaire filter covers the entire front of the unit to really keep out dirt, dust and pollen. It filters both outside and recirculated air. Unlike many other makes that are difficult to get to, the Frigidaire filter can be replaced in seconds by the owner.

BIGGEST AD PUSH IN FRIGIDAIRE ROOM CONDITIONER HISTORY!

More advertising dollars than ever before will be spent to tell the Frigidaire story in national magazines, newspapers, radio, TV, ad mats, co-op, direct mail, point of sale, slide films, special promotions, and movie trailers. All are geared to making 1954 the most profitable year for Frigidaire Dealers.

Great Circle Cooling gets all the air into all the room regardless of window location!





Window in right hand corner

Window in left hand corner

Window in center of wall

Frigidaire Great Circle Cooling tailors the airflow to the exact size and shape of the room no matter where the window is located. Simple adjustment of double-decker grille permits air to be directed right, left, up or down, or in any combination of directions, all at the same time. The diagrams at left show how all the cooling power developed can be delivered to every corner of the room under different circumstances. Air returns to unit across floor of room and up through opening in bottom front of cabinet.

Up-and-Around Circulation Surrounds You With Comfort

And this wonderful up-and-around circulation sets a new standard of comfort. The crisp, clean air flows up, out, and around into every corner and to every wall to surround every occupant gently in cool, refreshing atmosphere. No chilling, blasting drafts. No uncooled corners. No layers of stale, static air. It's another great selling plus in the sensational new Frigidaire "Silver Anniversary" Room Conditioner line.

Frigidaire Room Conditioners

BUILT AND BACKED BY GENERAL MOTORS

Frigidaire Division of General Motors, Dayton 1, Ohio

INDOOR "WEATHER" is dialed by concealed controls in Imperial models of Deepfreeze room air conditioners. Shown here is the ¾-ton Imperial DRT-76. It has thermostatic temperature control and is equipped for separately controlled fresh air intake and stale air removal. No-draft air flow may be directed by adjusting louvers.

STORAGE CONVENIENCES as well as an all-color interior is inside this more than 11-cu. ft. Deepfreezer refrigerator. Near the top is a swing-out meat compartment. One shelf slides out. Special storage is provided in the door.

CLOSE-UP OF AQUA-TAP feature which dispenses chilled drinks from a closed refrigerator door makes news for Deepfreeze. To fill the tumbler, press it against the dispenser. When the tumbler is removed the beverage will stop flowing. The beverage is stored in a gallon-plus plastic container inside the door.

Deepfreeze Introduces '54 Lines--

(Concluded from Page 1)

the Aqua-Tap. When the glass is taken away, the flow stops without dripping, according to the company.

The dispenser connects with a plastic container inside the door which can hold more than a gallon of water, fruit juice, or any other desired drink, except milk. It can be refilled by lifting a hinged lid.

Deepfreeze pointed out that the Aqua-Tap lends itself to self-service for children and can be used at parties. In daily use, the tap can cut down on repeated openings of the refrigerator and thus diminish frosting and reduce electric current consumption, it was noted.

A soft-seal gasket which, like the container, is odorless and stain-resistant prevents splashing because of door movements. Readily removable, the container and dispenser can be washed with the dishes, as can a removable plastic cup under the dispenser to catch overflow.

Storage capacity of chest-type home freezers is boosted through re-engineering of liner assemblies and a slight increase in height. New chest freezers of 14-cu. ft. capacity can hold about 26 lbs. more food than preceding models of the same floor area, the company said.

All-color interiors of "Emerasheen" green are offered in all refrigerators as well as certain home freezers in the company's new lines. The new interior scheme "employs a cool but subtly rich green in several shades to provide both harmony and variation," according to the company.

Room Coolers In 6 Models

Six models of room air conditioners are being introduced by Deepfreeze to mark its entry into this appliance market.

The Aqua-Tap dispenser is one of a group of door storage conveniences offered in the exclusive "Dispensador" of the top-ranking refrigerator in the new line, the more than 11-cu. ft. "Imperial Deluxe" model A-12.

Among the door features is a removable storage bin with two separate compartments, one for cheese and the other for salad greens, small fruits and vegetables, sandwiches, or any other small items. Made of polystyrene and having a hinged lid, the bin retains moisture for cheese and provides crisper-type storage for other foods. The cheese keeper has a special humidity conditioner and is equipped with a lift-out wire rack, suitable for the table.

Other specialized storage
Dispensador includes a bu
with temperature settings f
ite spreading consistency, a
ment for 21 eggs, and a
ment that holds up to se
quart bottles, individually a

Meat Compartment Swings on Pivot

New storage ideas are inc
also in the main part of th
erator. For example, there i
removable meat compartme
swings out on a pivot to o
selection when a hinged
lifted. The compartment is
that it automatically swing
back into place.

Another innovation is a
lower shelf which slides
bearings and has a guard

This Imperial model re
has three shelves, gold tri
front, and twin crispers un
glass shelf. An "Electromat
defrosts automatically. Ou
refrigerator is decorated
trim along a "swirl line,
escutcheon behind the hand
gold-white-and-red namepla

A second Imperial Delu
erator, the 9.3-cu. ft. model A-10, is practically identical with the 11-cu. ft. model. Except for capacity, the main difference is that chilled beverage storage in the door is provided by two 1-qt. "Handy Jugs" instead of the Aqua-Tap. The Handy Jugs are flat glass bottles with large-handled plastic holders.

In addition to the two Imperial Deluxe models, the refrigerator line is comprised of three "Custom Deluxe" models, F-10, G-10, and G-12, which come in a lower price range.

50-Lb. Frozen Food Storage In Low-Priced Model

The lowest-priced new unit, the 9.6-cu. ft. F-10, boasts such "plus" features as frozen storage capacity for about 50 lbs. of food, a high-humidity crisper of one peck capacity, and door storage for eggs and bottles.

Pushbutton defrost, which works automatically after a button is pushed, is built into the 9.6-cu. ft. G-10, which has two and one-half aluminum shelves, a glass shelf, twin crispers, and door storage for butter, eggs, and bottles. The same door storage and three and one-half aluminum shelves are provided in the G-12, of 11.5-cu. ft. capacity, which also has a frozen storage drawer and crisper of one peck capacity.

Deepfreeze is presenting a line of six home freezers and two institutional freezers, including both chest and upright styles, with storage capacities ranging from 8 to 24 cu. ft., according to NEMA standards.

Certain chest models have a new type of "feather touch" latch, which opens with a push instead of the conventional pull. This latch permits a person with loaded arms to open the freezer with a bump of the arm.

A "floating action" lid is to be found in all chest models. It is self-adjusting and self-aligning.

Extensive new styling, outside and inside, is a keynote of the 1954 freezers. Highlights include all-color Emerasheen interiors in some models, touches of gold, chrome and stainless steel trim, and a new decorative handle treatment for chest lids. Family resemblance of Deepfreeze products is furthered with the addition on the lids of all chest freezers of the sweeping "swirl line" treatment.

Push Latch New on Freezer

One of the new chest freezers is the Imperial C-146, which has a capacity of 14 cu. ft. This model, which holds more than 476 lbs. of food, has colored interior, new push latch, and special nameplate and ornamental handle.

Storage features include adjustable divider racks, three removable wire baskets, and a three-piece aluminum casserole set in green, red, and gold. The casserole set, which rests on a rack, may be used for complete family meals—frozen, heated, and served in the same utensils.

Temperature inside the cabinet may be adjusted with a control on the front. There is also a silent signal with a white light that shines during normal operation and goes off if power fails and a red light that comes on if cabinet temperature exceeds safe storage limits. Raising the lid turns on an interior light.

In upright style freezers, Deepfreeze is spotlighting Imperial model CU-126, which holds more than 420 lbs. of food in its 12 cu. ft. but re-
and 651-lb. capacity. In commercial and styling, the institutional models resemble the Imperial units, but they have the heavy-duty fin condenser, extra-power compressor, and sturdier bracing.

All six models of room air conditioners in Deepfreeze's new line will cool air, remove moisture from it, filter it, and circulate it through adjustable louvers. Imperial models, besides these functions also performed by Custom models, afford automatic temperature control and separately regulated fresh air intake and stale air exhaust. An auxiliary heating unit is optional in Imperial models.

Quiet operation is said to be assured by the fan designs of the conditioners as well as location of motors outside the window behind insulation. Exterior surfaces and interior parts exposed to moisture are rust-resistant, and a hydrolene base prevents condensation, according to the company. No motor oiling is required.

Making up the new line are the Custom DR-33 (⅓ ton), Custom DR-75 (¾ ton), Imperial DRT-76 and DRT-76-H (¾ ton), and Imperial DRT-100 and DRT-100-H (1 ton). The "H" in model numbers denotes addition of an auxiliary heating unit, of 1,500-watt or 1,750-watt rating. Imperial models have two-speed fans; custom, one-speed. Moisture removal capacity ranges up to 8 gal. a day.

The air conditioners can be installed in 60 minutes on the very day of purchase, according to the manufacturer. Each unit measures 26½ in. wide, 30 in. deep, and 16½ in. high, and projects 14 in.

All models are finished in "Nutra-tone Grey," and the Imperial models have concealed controls and gold-finish trim.

Deepfreeze is continuing its lines of electric ranges and water heaters without changes. The ranges include deluxe 40-in. models, as well as 36-in. and 21-in. units. Water heater models range in size from 30 to 81 gal., and are available in both table-top and cylinder types.

WA

PAC

Here are the Symbols SPORLAN has made Famous!

"G" VALVE

SPORLAN

"C" and "Z"

SELECTIVE CHARGES

No other thermostatic expansion valve designed for commercial refrigeration offers the Peak Performance of Sporlan's Famous G Valve with Selective C and Z Charges.

INTRODUCED by Sporlan to the industry in 1934, this combination has steadily forged ahead in popularity until today refrigeration men, both young and old, have made it their No. 1 choice . . . They know best what Peak Performance really means!

"C" CHARGE *for suction temperatures* above *zero.*

"Z" CHARGE *for suction temperatures* below *zero.*

plus **"X" CHARGE** *for extremely low temperatures.*

Buy a Sporlan "G" Valve

with Selective Charges from your Wholesaler today! . . . and be sure to ask him for the Sporlan 52-C Catalog. With it you can select the proper Thermostatic Expansion Valve, Solenoid Valve and Catch-All to give that Sporlan "Right-Down-the-Line" Peak Performance!

SPORLAN VALVE COMPANY

7525 SUSSEX AVE. ST. LOUIS 17, MO.

EXPORT DEPARTMENT

89 BROAD STREET NEW YORK 4, N. Y.

NEW FRIGIDAIRE ROOM CONDITIONERS ARM DEALERS FOR '54 SALES AND PROFITS

ine operation. A service man can perform the job in just a matter of minutes. "Twin" models, with optional High-Flow Heat, are available for 208 and 230 volt a. c. as well as 115 volt current. All models are priced competitively, and designed from front to back to help Frigidaire Dealers get the lion's share of the room conditioner business.

Silver Anniversary Line loaded with new sales-winning features . . . new beauty and new modern styling

From their dramatic new color and styling to their new value-packed performance features, Frigidaire Room Conditioners have been specially re-designed to give dealers plus sales power in 1954.

High efficiency, supplementary heating, optional thermostat control, and many other important features can now be added to the list of such proved sales-making advantages as Great Circle Cooling and Frigidaire's exclusive Twin Cooling Systems.

They're all there, and more, in Frigidaire's wonderful new "Silver Anniversary" line. It's the line that marks the 25th year since Frigidaire developed and installed the first successful room conditioner. It's the line that pays off those 25 years' experience with units built to give customers quality and performance unsurpassed by any other room air conditioners made.

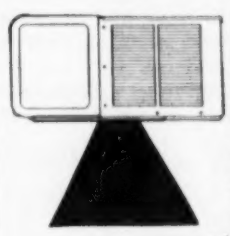
Now Heats As Well As Cools

Now dealers can sell Frigidaire Conditioners on a year 'round basis! The new Frigidaire Room Conditioners include models with High-Flow Heat for instant supplementary warmth, that is so welcome in cool, damp weather. Positive, fast-acting, the Frigidaire heating system is entirely independent of the cooling system and provides a constant, uniform flow of heat, when desired. Special automatic safety cut-off shuts off heating whenever fan stops operating.

Automatic Temperature Control

Now dealers can "sell up" to automatic comfort on every single Frigidaire model. Simple installation adds low-cost thermostat to any one of the new "Silver Anniversary" Room Air Conditioners if local utility permits automatic operation. On "Twin" models thermostat control is also available as factory-installed equipment. Here's real flexibility to meet all competition with real deluxe models.

BALANCED MOUNTING



Here's the real answer to simple installation and positive comfort for customers. Proper weight centering minimizes stress and strain on walls and sills . . . eliminates vibration and need for ugly, heavy outside braces. It locates air delivery and return so that drapes, curtains and window walls can't block off air, so that all the cooling power developed by the Meter-Miser is used . . . so all cooled air circulates smoothly and evenly throughout the room.

Super Silent Operation

Now, more than ever, Frigidaire stands out as *the* quiet room conditioner—a sales fact that is becoming more and more important to customers. Centrifugal-type fan, effective elimination of vibration, and extra-heavy acoustical insulation, combine to make these units whisper-quiet.

...omy story in the industry— ...up to ½ the operating cost!"

Frigidaire and Frigidaire alone puts two Meter-Miser compressors, two separate cooling systems, in its TWIN models, to provide truly exclusive economy and flexibility. Just *one* cooling system operates in moderate weather for complete cooling, dehumidifying, filtering, circulation, and ventilation at half the electric bill. *Both* cooling systems team up to double cooling power economically when temperatures soar. It's just like having two room air conditioners for the price of one. No risk of over-cooling on mild days. No risk of under-cooling in hottest weather. Only Frigidaire Twin Models tune refrigeration capacity to weather changes so effectively. Unlike many other room air conditioners, there's no wasteful heating of refrigerant; no bringing in of extra hot, humid air, no slowing down of fan speed.

Meter-Miser Powered

And, of course, all models are powered by the Frigidaire Meter-Miser, simplest cold-making mechanism ever built, famous the world over for economy and dependability. It's the same type of wonderful compressor that's in millions of Frigidaire refrigerators. Every Meter-Miser is warranted for 5 years.

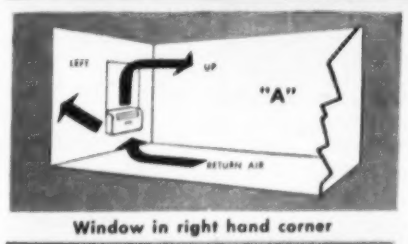
GIANT FULL-WIDTH, FULL-HEIGHT FILTER

No handkerchief-size filter here to clog up quickly and bog down cooling efficiency. The huge Frigidaire filter covers the entire front of the unit to really keep out dirt, dust and pollen. It filters both outside and recirculated air. Unlike many other makes that are difficult to get to, the Frigidaire filter can be replaced in seconds by the owner.

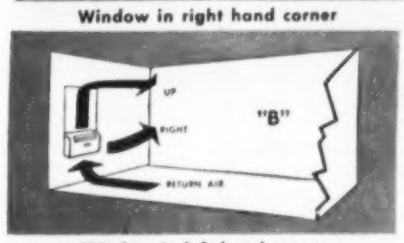
BIGGEST AD PUSH IN FRIGIDAIRE ROOM CONDITIONER HISTORY!

More advertising dollars than ever before will be spent to tell the Frigidaire story in national magazines, newspapers, radio, TV, ad mats, co-op, direct mail, point of sale, slide films, special promotions, and movie trailers. All are geared to making 1954 the most profitable year for Frigidaire Dealers.

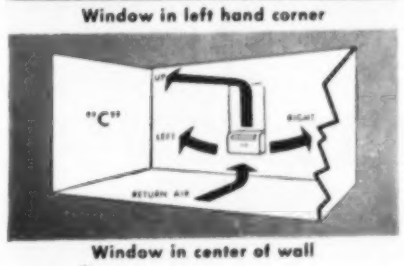
Great Circle Cooling gets all the air into all the room regardless of window location!



Window in right hand corner



Window in left hand corner



Window in center of wall

Frigidaire Great Circle Cooling tailors the airflow to the exact size and shape of the room no matter where the window is located. Simple adjustment of double-decker grille permits air to be directed right, left, up or down, or in any combination of directions, all at the same time. The diagrams at left show how all the cooling power developed can be delivered to every corner of the room under different circumstances. Air returns to unit across floor of room and up through opening in bottom front of cabinet.

Up-and-Around Circulation Surrounds You With Comfort

And this wonderful up-and-around circulation sets a new standard of comfort. The crisp, clean air flows up, out, and around into every corner and to every wall to surround every occupant gently in cool, refreshing atmosphere. No chilling, blasting drafts. No uncooled corners. No layers of stale, static air. It's another great selling plus in the sensational new Frigidaire "Silver Anniversary" Room Conditioner line.

Frigidaire Room Conditioners

BUILT AND BACKED BY GENERAL MOTORS

Frigidaire Division of General Motors, Dayton 1, Ohio

Norge Introduces New Appliance Lines--

(Concluded from Page 1, Column 4)

one giant unit and a super speed unit on the electric range.

"Tele-switch" controls on the electric model provide seven cooking speeds. A signal light indicates when any surface unit is on.

The gas range has automatic lighting "Spiro-lator" surface burners which focus heat evenly under any size utensil. "Click-simmer" valves provide instant adjustment of simmer-flame height, thus preventing accidental extinguishing of flame, it was pointed out.

The oven and the appliance outlet of the electric range are fully automatic. Oven interiors in both models are finished in white-stippled "marbelite" porcelain.

Full-size ranges are available in nine gas and five electric models. These ranges are 38 in. wide and 27 in. deep.

Deluxe electric ranges have the tele-switch control and a corresponding indicator on the back panel which lights up to identify the unit and the operation selected. Five ranges are made with "Pick-A-Pan" compartments.

One of the electric ranges and five of the gas models have picture windows. All standard electric ranges have deep well cookers.

Norge manufactures an apartment-size range, electric model E-2A and gas model N-2.

New economy "Time-Line" automatic washers and dryers join deluxe automatic washers and dryers in the 1954 Norge line.

Both dryers are available in gas and electric models. The new low-priced dryer (electric model AE-610 and gas model AG-710) has the exclusive Time-Line control panel. Temperature is kept at a safe 140° by an automatic thermostat.

Both dryers have 16-in. doors which open 180° so clothes can be put in or taken out readily. Other features are knee latches and optional venting through side, front, back, or bottom of cabinet.

The economy washer, model AW-410, automatically washes, rinses, and spin-dries. A new-type, two-way switch controls filling of the machine and selects hot or warm water temperature. Movement of a single knob on the Time-Line control panel will stop, start, or repeat any cycle of operation.

Eight to 9 lbs. of dry clothes will "come clean" in 32½ minutes in either washer, according to Norge.

Full skirts, sturdy non-tip construction, and increased horsepower are features of conventional clothes washers which Norge has completely redesigned for 1954.

All the washers are built with five casters for moving ease. Two models have Norge automatic timers, which can be set for any of four timed wash periods or on a "hold" position for continuous operation.

Food freezers in three chest models and two in upright styles make up the 1954 Norge freezer line-up.

The double-door upright freezer, model VFF-200, newest of Norge freezers, has a capacity of 19.15 net (NEMA) cu. ft. The single-door upright freezer, model VHF-1125, has a storage capacity of 10.5 net (NEMA) cu. ft.

OVEN IS SO SPACIOUS in Norge's 30-in. range big cooking jobs have room to spare.

Chest freezers are made in 8, 15, and 23-net (NEMA) cu. ft. sizes. The two largest chest freezers have fast-freezing compartments.

Gas and electric water heaters made by Norge are available in table-top or vertical enamel styles.

Electric models are made with single or double heating elements which project directly into the water to eliminate transferring heat through a tank wall.

The table-top model (series EHT-10 and GHT-10) is available in 30 or 40-gal. capacities. The vertical enamel (series EH-10 and GH-10) heaters are made in six sizes ranging in capacity from 30 to 82 gal.

Airtemp--

(Concluded from Page 1, Column 5)

stitute to fit the greatest number of metal windows installed in American homes and offices. The potential market in homes built since 1945 is described by Knoff as "tremendous."

Also presented at the same time was a new ½-hp. model to be added to the company's ¾ and 1-hp. models of conventional room air conditioners. Knoff said that a heating feature will be available on ¾ and 1-hp. models through the use of a reverse cycle feature that extracts heat from outside air directing it into the room.

MODELS AND PRICES LISTED BY MANUFACTURER

Factory retail prices and features for the Airtemp air conditioners include the five-year compressor warranty and federal excise taxes. These prices are:

Model 1750, deluxe casement window room air conditioner, ½ hp.—$374.70. (Thermostatic controls are standard equipment.)

Model 1650-2, deluxe room air conditioner, ½ hp.—$292.09. (Thermostatic controls are available as optional equipment.)

Model 1675-2, deluxe, ¾ hp.—$368.56. (Thermostatic controls are standard equipment.)

Model 1675-3, custom, ¾ hp.—$412.59. (Thermostatic controls, reverse cycle heating are standard equipment.)

Model 1600-2, deluxe, 1 hp.—$439.21. (Thermostatic controls are standard equipment.)

Model 1600-3, custom, 1 hp.—$488.32. (Thermostatic controls, reverse cycle heating are standard equipment.)

OVER 1,000 MEN ATTENDED 5 MEETINGS

Knoff conducted the last of a series of five national room air conditioner sales conferences. Over 300 salesmen attending the meeting in the Sheraton. More than 700 attended earlier conferences held in New York, Atlanta, New Orleans, and Dallas.

Besides the gift certificates, the Christmas promotion includes co-operative newspaper advertising, direct mail advertising, and point of sale merchandising. The gift certificate campaign began last week.

Remington Sales Jump 97% over Last Year

AUBURN, N. Y. — Herbert L. Laube, president of Remington Corp., manufacturer of room air conditioners, has announced that sales for the fiscal year ended Oct. 31 were 97% higher than the same period last year.

Laube also announced that the directors have voted a 10% stock dividend payable Feb. 1 to stockholders of record Dec. 31. There are now 285,211 shares of Remington $1 par value common stock outstanding.

Although final figures for the fiscal year ended Oct. 31 are not yet ready, Laube said combined sales at home and abroad of window and console-type room air conditioners amounted to $6,407,414, as compared to $3,246,-811 for the previous fiscal year.

A substantial increase in sales is expected in 1954.

WALL WIRE PRODUCTS COMPANY

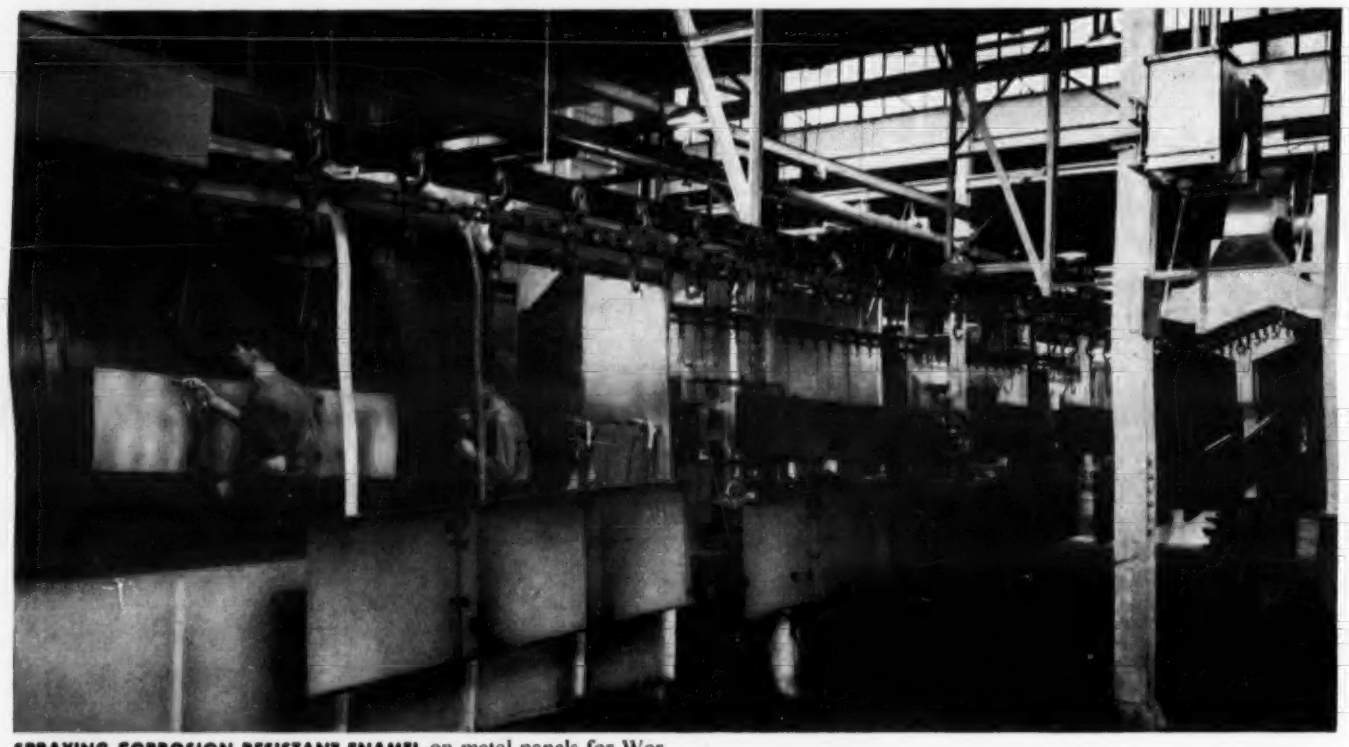
A FOREMOST NAME IN THE MANUFACTURE OF DIVERSIFIED WIRE PRODUCTS OF SUPERIOR QUALITY

ORIGINATORS OF WIRE & TUBE CONDENSERS FOR STATIC AND FORCED CONVECTION, AND OF WIRE & TUBE FREEZER SHELVES

STAINLESS STEEL SHELVES, SHELVES WITH CHROME PLATE, ZINC PLATE, PRO SEAL AND PORCELIZED FINISH

WIRE GRILLES · GUARDS
MATERIAL HANDLING BASKETS
MISCELLANEOUS FORMED AND WELDED WIRE ASSEMBLIES
ARC WELDED ASSEMBLIES.

WALL WIRE PRODUCTS CO.
PLYMOUTH, MICHIGAN



SPRAYING CORROSION-RESISTANT ENAMEL on metal panels for Worthington evaporative condensers and air conditioners. This chlorinated rubber base enamel, selected by Worthington after rigorous tests, resists chipping and long exposure to salt fog, acids, alkalis, ultra-violet light, and high and low temperatures.

FAN HOUSINGS ARE LOADED on conveyor which carries them through Worthington special 5-stage washing process. This washing, which includes sprays of Bonderite and mild chromic acid solution, prepares the equipment for the corrosion-resistant enamel.

YEARS OF TROUBLE-FREE SERVICE are assured with this Worthington evaporative condenser. The corrosion-resistant finish, rugged construction, large diameter hollow fan shaft and self-aligning ball bearings are some of the features that make this unit the finest available. You can get a Worthington evaporative condenser in any one of 18 sizes, in capacities of 10 to 150 tons.

Rustproof finish adds years to life of air conditioning equipment

For years, corrosion has presented a real problem in air conditioning and refrigeration equipment. Brine spray, water, fumes—all caused metal equipment to corrode. To combat this, Worthington engineers developed the bonderized two-coat baked chlorinated rubber enamel finish now used on all Worthington air conditioning and refrigeration units.

This finish, the result of years of testing and research, completely protects the metal against corrosion and preserves the original appearance of the equipment. Rigorous tests have shown that this finish will last at least three to four times longer than the best hot-dipped galvanizing coating.

Advances in construction and design like this are standard practice with Worthington, a leader in air conditioning and refrigeration for over half a century. From giant industrial refrigeration systems down to the air-conditioner for a baby's nursery, Worthington can handle any job, and provide exactly the right equipment. So when you think of air conditioning or refrigeration—think of Worthington.

For more information, get in touch with your nearest Worthington distributor. Or write to Worthington Corporation, Air Conditioning and Refrigeration Division, Section A.3.40, Holyoke, Mass. A.3.40

WORTHINGTON

CLIMATE ENGINEERS TO INDUSTRY, BUSINESS AND THE HOME

BETZ MODEL HR

QUALITY AT LOW COST

THE ORIGINAL HALF-ROUND AND STILL THE LEADER

MODEL NO.	BTU'S @ 1° T.D.	C.F.M.	COIL SURFACE	LIST PRICE
A-260-HR	260	610	74.30 Sq. Ft.	$185.00
A-347-HR	347	740	100.28 Sq. Ft.	209.00
A-433-HR	433	860	125.28 Sq. Ft.	232.00
A-540-HR	540	1052	153.22 Sq. Ft.	275.00
A-688-HR	688	1400	183.00 Sq. Ft.	312.00
A-867-HR	867	1800	231.75 Sq. Ft.	392.00

See Them at Your Wholesalers

BETZ CORPORATION
HAMMOND ★ INDIANA

3 Philco Distributors Get First Service Awards

PHILADELPHIA—Philco Corp. is currently presenting its first National Philco Distributor Service Awards to selected Philco distributors "in recognition of the training supervision and outstanding cooperation given to servicemen and servicing dealers. . . ."

In paying tribute to Philco's service minded distributors in St. Louis, Hartford, and Cincinnati, who are among the first of several distributors to receive this singular award during 1953, Henry T. Paiste, Jr., Philco's vice president in charge of product performance and service, said:

"The increasingly complicated nature of television sets and other appliances requires a highly skilled group of service technicians in every community to install and to maintain these products at top levels of performance during their lifetime.

"Through a national organization known as Philco Factory-Supervised Service, whose members are Philco servicing dealers and independent professional service technicians in every locality, we satisfactorily discharge our company's service responsibilities.

"We could not do so without the effort and cooperation of the Philco distributor who supervises and locally administers our service program.

"The National Philco Distributor Service Award is given only to those distributors who have made an outstanding contribution to our program and who have provided full facilities and supervision in the careful and thorough training of servicemen and dealers.

"Because of the effectiveness of its service clinic, the uninterrupted schedules of training schools and service meetings, and because of the fine relations with—and assistance rendered to—members of the servicing profession, this distributor has set a shining example and assured the owners of all our products in the areas the finest possible consumer product service."

Distributors honored thus far are: Artophone Corp., St. Louis, Roskin Distributors, Inc., East Hartford, Conn., and Tri-State Distributing Corp., Cincinnati.

Other distributors scheduled to receive the award in the near future will soon be visited by Paiste or Russell M. Oliver, Philco's general service manager.

Philco, through its distributors, also recognizes the independent service technician, service shop, or Philco servicing dealer with the Philco Service Achievement Award when it is merited.

Eligible to receive it are Philco dealers who render outstanding service to customers and any technician-members of Philco factory-supervised service. Each of these dealers or members is continuously rated on ten major points of service achievement, the most important of which are technical ability, service reputation, and good customer relations.

Admiral Opens Branches In Dallas, Oklahoma City

CHICAGO — Admiral Distributors, Inc., Dallas division, has been established at 1030 Dragon St. to handle the sales and service of Admiral products in the Fort Worth-Dallas territory, Clarence Tay, general manager of branches, announced recently.

He said the new branch was set up to enable the company to better serve its dealers in North Central Texas.

Tay announced at the same time the opening of Admiral Distributors, Inc., Oklahoma City division, at 1017 W. Reno St. Increased television business stimulated by the new UHF TV stations in Oklahoma City made it necessary to establish the branch in that city, it was stated.

C. E. Rogers, formerly general sales manager of Capitol Distributors, Inc., has been named general manager of the Oklahoma City branch. Other personnel appointments include Glenn Crawford as general sales manager, Andrew Henderson as service manager, and Earl Barron as sales promotion manager.

Capitol Distributors formerly was the Admiral distributor in Dallas and Oklahoma City.

I-H Shifts Dates for Distributor Meetings

CHICAGO — New dates for the series of regional distributor meetings at which International Harvester Co. will unveil its 1954 refrigeration products have been announced.

Originally scheduled for December, the meeting will be held in January so the factory can build sufficient inventories of all models prior to the showings, it was explained. Under the new arrangement, the company hopes to process normal orders immediately rather than shipping one or two models at a time. A spokesman said I-H will be able to fill mixed carload orders at the start of the season.

The new meeting schedule is as follows: Jan. 14, Congress hotel, Chicago; Jan. 15, Essex House, New York City; and Mark Hopkins hotel, San Francisco; Jan. 20, Nicolet hotel, Minneapolis; Jan. 21, Dinkler Plaza, Atlanta; and Jan. 23, Adolphus hotel, Dallas.

Dania Appliance Co. Opens

DANIA, Fla.—The Dania Appliance Co. was opened here recently by Ed Lythgoe at 1008 S. Federal.

Lythgoe came to this area from Richmond, Va., three years ago. He worked as an appliance salesman with Hurst Electric, Miami Shores, for 2½ years. In Richmond, Ed was in business with his brother in the plumbing and appliance business.

Lythgoe states he expects to enlarge his stock right along but intends to remain in small home electrical supplies and appliances.

Nash-Kelvinator'53 Sales, Earnings Top '52 Totals

DETROIT—Nash-Kelvinator Corp. had net earnings of $14,123,026, or $3.25 per share of capital stock, in the fiscal year ended Sept. 30, 1953, George W. Mason, president, reported.

This compared with net earnings $12,603,701, or $2.90 per share, in the 1952 fiscal year.

Sales for 1953 were $478,697,891 compared with $358,400,502 in the previous year. The gain reflects defense sales of $42,144,457, the addition of laundry equipment to the Kelvinator product line, and larger output of automobiles and appliances.

O'Brien Will Speak at Jan. NARDA Meeting

CHICAGO — William E. O'Brien, general sales manager of the Toastmaster Div., McGraw Electric Co., will be the featured speaker at the luncheon of the National Appliance and Radio-TV Dealers Association on Jan. 12, second day of the 1954 annual convention, according to A. W. Bernsohn, NARDA managing director.

Emerson Dole, NARDA Director from Wichita, Kans., will speak at the Jan. 11 luncheon. His subject will be the use of "Creative Selling" against unethical competition.

Life magazine's research film on "Your Customer Today" will also be shown at the Tuesday lunch meeting. All events will be held at the Conrad Hilton hotel, in Chicago.

HOUSEHOLD REFRIGERATION

Dealer 'Picks' His Customers

Crowded Clothes Lines, Piles of Trash Give Store Leads on Specific Appliances

ST. LOUIS—Driving through residential neighborhoods with a crew of boys and having them hang promotional cards on the door knobs of selected homes has proved an effective method of building appliance volume for Paul Cook, head of All-Gas Appliance Co. in suburban Webster Groves.

A Servel dealer for many years, Cook has developed a "door knob hanger," a 10-in. by 6-in. yellow card slotted at the top that it can easily be slipped up over the front door knob of a home. Produced by a local printer, the illustrated advertisements give product, trade-in, term, and after information.

Cook has found that two boys, working during after-school hours, can distribute around 350 cards an hour. The important point, he emphasized, is the fact that he "picks the homes" on which the card is hung.

For example, in selling automatic laundry equipment, Cook watches on Mondays for homes where there are crowded clothes lines, indicating a large family. Where refrigerators are the subject, he concentrates on older homes, which are apt to contain an aged refrigerator. Incinerators are promoted where piled-up trash in the alley behind the home indicates that collection service by the community is not good.

No matter what the item may be, there are always visible indications to the practiced eye that a prospect exists. Cook confesses that "I get a real kick from finding that I have guessed right when the homeowner turns up in the store a few days later."

As many as 5,000 of the cards have been distributed in a single season, and returns have been well above any produced by other forms of advertising within the dealer's experience.

Along with this form of house-to-house prospecting, Cook is a steady user of newspaper advertising, concentrating in a weekly "community journal" which has a high readership in the Webster Groves area.

Simpson's on The Plaza

TORONTO, Ont., Can.—Simpson's Department Store has opened an appliance shop in the new Lawrence Plaza.

"When the salesman said...

'ALUMINUM IS RUST-PROOF'

...that sold me!"

Aluminum can help you close many a sale, because customers are already familiar with aluminum's advantages. And when you point out the features of aluminum evaporators and other aluminum parts in the refrigeration products you display . . . it can mean the difference between "I'll think about it" and "I'll take it."

Always point-out these extra features...

FASTER FREEZING plus greater defrosting efficiency.

RUST PROOF parts for more years of trouble-free service.

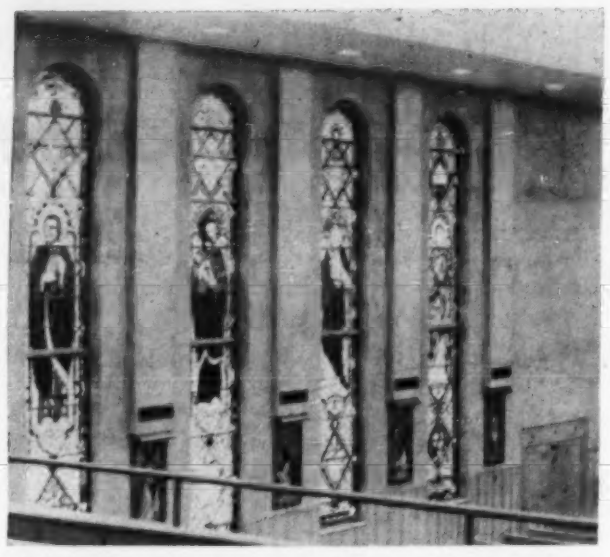
LIGHT WEIGHT easy-to-clean shelves for unusual convenience.

NON-TOXIC qualities provide greater food protection.

BOHN ALUMINUM AND BRASS CORPORATION

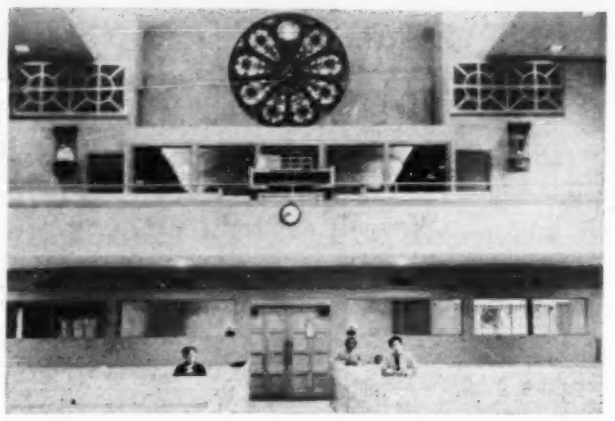
1400 LAFAYETTE BUILDING • DETROIT 26, MICHIGAN

Sales Offices in All Major Cities



CONDITIONED AIR in St. Luke's church in Lakewood, Ohio, is delivered to nave through outlets directly over Stations of the Cross between stained glass windows. Furred ducts give impression of columns supporting roof.

FOUR OUTLETS in dome over sanctuary blend so well with huge painting they're almost impossible to see. Arrow indicates location of one of the two return air grilles which provide attractive seting for Vigil lights.



AIR OUTLETS are also provided at rear of nave for vestibule beyond, balcony, and glass enclosed section above where mothers may sit with their babies.

Air Conditioned Church Draws Overflow Crowds

Efficient System Incorporated Into New Building Adds Beauty to Comfort; Air Outlets, Return Intakes Become Part of Architecture

LAKEWOOD, Ohio—Air conditioning in the new St. Luke's church in this Cleveland suburb has proved so popular that overflow crowds attend Sunday services even in summer.

And the church, due to its rules, has been forced to turn down many requests from couples in other parishes who wished to be married in St. Luke's because it is air conditioned.

"Cooling has definitely paid off," says Fr. Peter P. Cherniss, a former architect who designed the church, searched Europe for materials, stained his own glass windows, and acted as the general contractor.

In a booklet describing numerous features and construction details of the new church, the following comments were made about air conditioning:

"During the summer, since the atmosphere in most parts of the United States often comes close to the body temperature, which is 98.6° F., it becomes very difficult to dissipate heat of the body. The obvious result is discomfort.

"To eliminate this condition, air cooling and conditioning units are engineered to provide the control of temperature necessary, the control of humidity, the cleaning and circulation of air. Open windows in the summer augmented by ordinary ventilating fans certainly have not proved adequate to promote sterile atmosphere or cleanliness."

40-Ton System Used

The cooling system consists of a 40-ton Carrier condensing unit and a 14,000 c.f.m. air unit, both of which are located in an equipment room in the church basement.

The air unit also provides ventilation on a year-round basis, winter heating being accomplished through radiant coils in the church floor and baseboard radiation at the outer walls.

The installing contractor, Refrigeration Sales Corp., which distributes Carrier in the Cleveland area, came up with some unusual features in the air delivery and return system for this job.

Measuring 150 ft. long by 62 ft. wide, the new church was designed to acommodate 700, but as many as 1,000 are showing up for masses. It replaces a church of frame construction which was built in 1922 and sat 400.

Original plans of the new church did not call for air conditioning, but William M. Brewer of Refrigeration Sales worked up a successful layout of ductwork that not only did not detract from the architectural beauty but in some details made definite improvements.

Ducts Rise Height of Church

From the air unit in the basement two large ducts branch off and rise the full height of the church on each side. Then they continue down the full length of the church on each side above the ceiling.

From these on each side vertical take-offs drop down to 5 by 18-in. outlets which are 10 ft. above the floor. This arrangement supplies most of the cooling air at a height which will benefit the worshippers but does not waste cooling effect on the warmer air near the high arched roof.

Each of these outlets is located directly over one of the paintings representing the Stations of the Cross, and the furred ducts above give the impression of being columns supporting the roof structure.

These outlets, plus four at the back, supply air for the nave or main body of the church.

Additional outlets furnish air to the narthex or vestibule.

Outlets Included In Sanctuary

Four oulets are provided in the dome of the sanctuary to insure a supply a cool air reaching the priests and altar boys during services.

These outlets, however, are cleverly camouflaged in the huge painting of the Crucifixion which completely fills the sanctuary dome. Thus, a person has to look closely, and know what he's looking for, to spot the outlets.

Air conditioning is also provided to the priests' and boy's sacristies on either side of the sanctuary, as well as to the gallery over the narthex.

Especially noteworthy in the gallery, where also is located the church organ, is a glass enclosed "baby room." Here mothers with infants may sit during services with the assurance that any crying of the baby will not annoy others.

Conditioned air, of course, is supplied to the baby room, which also has a p. a. system to pick up the services when the door to the room is closed.

Air conditioning is even furnished to the four confessionals which in this church are recessed so as to be flush with the outer wall. Here, however, only the center compartment—the one occupied by the priest—is air conditioned because he must spend considerable time there while hearing confessions and is also usually heavily clothed in the vestments required by church law.

Individual air volume control is provided for each confessional so that the priest can regulate the degree of cooling to suit his own taste.

Although designing the air supply system to harmonize with the architecture of the church presented problems, the air return system first loomed as even more difficult.

The question here was to devise suitable registers for the return air intakes located on each side of the sanctuary at right angles to the side altars.

Solution was built-up rectangular shaped grilles covering the return air opening in the floor. Each measures approximately 30 in. high, 4 ft. long, and 1 ft. across. Design of the return intake grilles was a standard pattern which was finished in bronze.

These proved so attractive to Fr. Chermiss, the architect, that he incorporated the same grille and pattern as railings in front of two deeply offset stained glass windows.

"We've had a lot of favorable comments on the grilles," he says.

Because the return air intakes were located so close to the machinery room, which is directly under the sanctuary of the church, it was feared that noise transmission would be a problem.

Sound Traps Cut Noise

This has been successfully avoided, however, by sound traps built into the return air ducts. These consist of 8-ft. lengths of celotex boards which are spaced in 4-in. centers.

Under normal summer operation, the air conditioning system mixes

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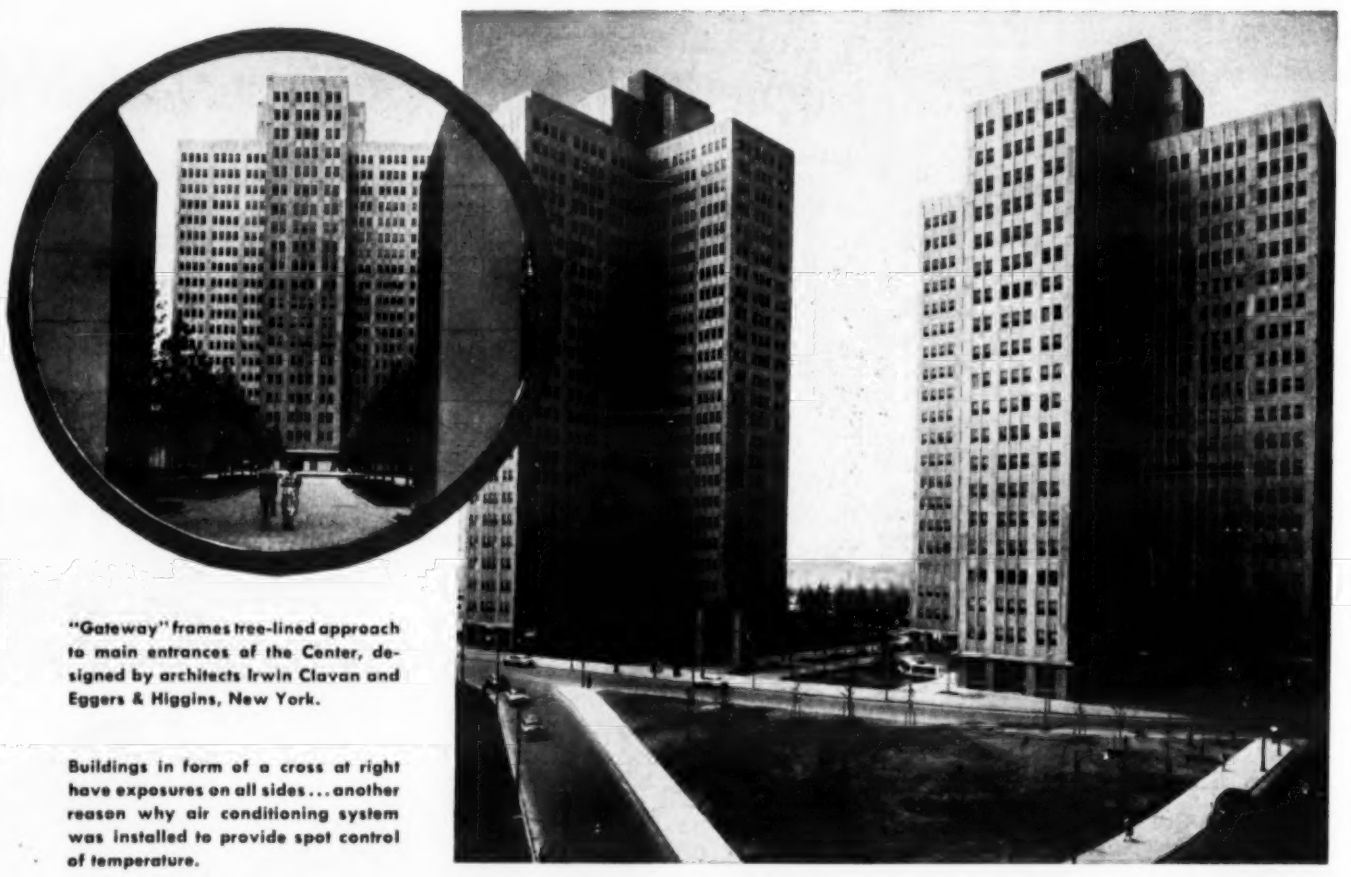
One of the world's largest highlights today's demand



"Gateway" frames tree-lined approach to main entrances of the Center, designed by architects Irwin Clavan and Eggers & Higgins, New York.

Buildings in form of a cross at right have exposures on all sides... another reason why air conditioning system was installed to provide spot control of temperature.

New Construction and Modernization Create Steadily Expanding Market for All Types of Equipment

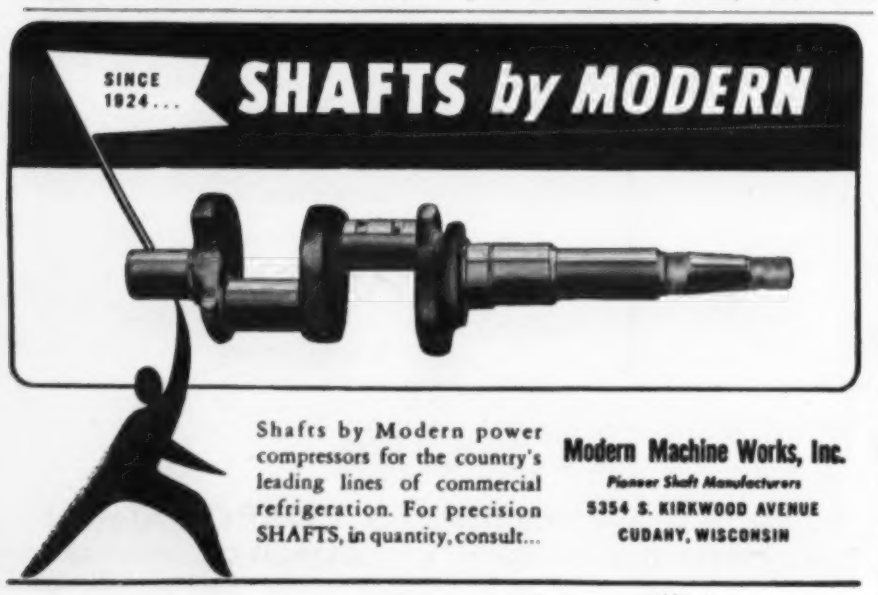
Towering above the world-famed "Golden Triangle" in downtown Pittsburgh, Pa., are the first three imposing structures of Gateway Center . . . a $50,000,000 architectural development owned by The Equitable Life Assurance Society of the United States. The project is part of a vast one-and-a-half-billion-dollar program to revamp the city into one of the most modern in the country. Each building of the Center is air conditioned throughout.

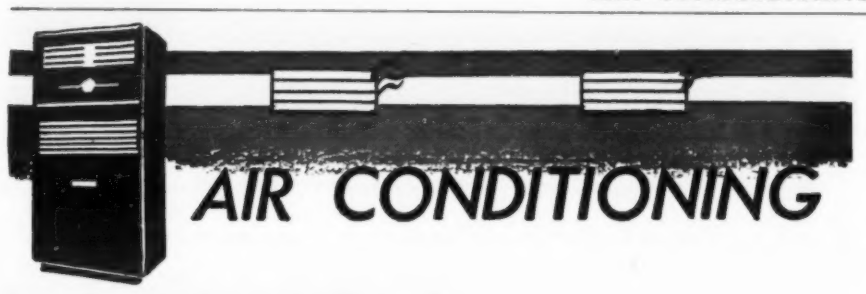
CENTRAL SYSTEM USED

Deep in the basement of building No. 3 (401 Liberty Street) a central refrigeration plant is powered by three centrifugal compressors. These are of *Carrier Corporation* manufacture, operated for maximum safety and efficiency with Du Pont "Freon-11"* refrigerant. Each has a separate drive with separate evaporator and condenser. The machines provide a total of 4,500 tons of refrigeration, and a fourth unit will later serve additional buildings. It is the largest system of its type ever installed in a commercial office development.

Two systems are featured and, from the standpoint of control, they are among the newest, most efficient form of air conditioning. One consists of a low-pressure interior system thermostatically controlled at the source. The other, an exterior high-pressure conduit system, delivers conditioned air to 6,000 room units mounted below windows. These units allow individual control of temperature within a range of from 72°F. to 80°F. Four low-pressure controls are at return grilles on each floor.

There are twenty-four sets of cooling, dehumidifying and heating coils and a like number both of electrostatic filters and fans that circulate conditioned air at the rate of 743,000 cfm to comfort condition 870,000 sq. ft. of rentable floor area. No cooling tower is used, as water


SINCE 1924...
SHAFTS by MODERN
Shafts by Modern power compressors for the country's leading lines of commercial refrigeration. For precision SHAFTS, in quantity, consult...
Modern Machine Works, Inc.
Pioneer Shaft Manufacturers
5354 S. KIRKWOOD AVENUE
CUDAHY, WISCONSIN



Air Conditioned Church--

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return air with 20% fresh air. A Carrier "economizer" control is provided for winter operation when the air handling system is operating to provide ventilation to the church.

The control modulates the amount of outdoor air picked up in winter so that 63° F. air will be delivered to the church. When the outdoor temperature rises to 70°, the air intake damper is positioned to admit the 20% maximum.

The entire air-conditioning system is turned on or off by a single switch in the master light panel located in the priests' sacristy. Once this switch is on, control is taken over by a thermostat. Beside the panel is also located the control for a large exhaust fan which pulls air through two large grilles in the ceiling.

The exhaust fan, explains Fr. Cherniss, is often turned on between masses to remove air and thus help the conventional air conditioning system.

Hot water which is piped through the radiant floor coils and baseboard radiators comes from the boiler room in the adjoining school.

Besides air conditioning, St. Luke's has several features which have aroused interest of church architects. For example, three catwalks above the false ceiling provide easy access to lights, so changing bulbs in fixtures recessed in the high ceiling is no problem.

Another special feature is the bride's alcove just off the vestibule of the church. This is completely fitted with mirrors so the bride can do her last-minute primping just before the wedding ceremony.

In his trip through Europe looking for paintings, statues, and other things for the new church, Fr. Cherniss realized that it was cheaper to buy marble in Italy and ship it to Lakewood than to buy lumber at home. Thus, marble was used extensively.

Visitors to the church also take special notice of the unusual bronze gates of the baptistry. These Fr. Cherniss obtained for the proverbial "song."

"In Ireland," he recalls, "I was checking into the custom there of burning peat to heat churches. While in the boiler room of one church I spotted these discarded gates, as green as the sod of Erin. I was told they were being sold for scrap metal, so I bought them for the price of scrap."

It was such enterprise as that which kept the cost of the new St. Luke's church down to $275,000 compared to estimates that ran as high as $750,000.

And Msgr. McDonough is also justifiably proud in stating," the church was fully paid for when it was completed."

Liberty Life Bldg. To Have Dual-Duct Air Conditioning

GREENVILLE, S. C.—Liberty Life Insurance Co. will begin construction of its new home office building in Greenville in November and when completed it will be the largest and most modern office structure in the Palmetto State, according to Francis M. Hipp, president.

"A unique air conditioning system, the only one of its kind in this vicinity, will serve the entire building," Hipp said.

"Known as a dual-duct system, it will allow both heating and cooling within a given area by means of a number of thermostatically-controlled outside regulators.

"Cooling will be accomplished by three 15-ton compressors, which will maintain a temperature with an approximate differential of 10° between the interior and exterior of the building.

"Total cost of the project is estimated to be $2,500,000," Hipp stated.

Contractor for the air conditioning work is Buensod-Stacey, Inc.

INSIDE DOPE

Learn to live and laugh—
Thus delay your epitaph

By GEORGE F. TAUBENECK

(Concluded from Page 1, Column 1)

They tell me that a rattlesnake, if cornered, will become so angry it will bite itself. That is exactly what the harboring of hate and resentment against others is—a biting of oneself. We think we are harming others in holding these spites and hates, but the deeper harm is to ourselves.—E. STANLEY JONES.

Be of Good Cheer

Those who insinuate that a recession is near don't face up to the hard facts of America's economic position, declares Paul G. Hoffman, chairman of the board of The Studebaker Corp.

"There is absolutely nothing wrong with our economy," Mr. Hoffman tells us, "that a higher volume of hard-hitting advertising and sales promotion by business, and 100,000 good creative salesmen, could not cure."

In outlining the strong credit side of the American economy today, this internationally-known industrialist cites the following 14 positive facts:

1. The average income of the American wage earner is at its highest peak.

2. Employment is at an all-time high of 63 millions.

3. Individuals have been saving 8% of their after-tax incomes since 1950, compared with 5% in 1940.

4. Banks are averaging 50% of their deposits in loans as compared with 25% in 1940.

5. Scheduled tax reductions are expected to provide individuals and corporations with $3.3 billion in additional "spending money."

6. Unemployment compensation and similar economic "props and supports" have been enormously increased.

7. U. S. productivity is roughly equal to the combined output of all the rest of the peoples of the world.

8. Industrial horizons are still expanding at a remarkable rate.

9. So-called basic industries are continuing to maintain strong foundations under the economy.

10. Governmental spending will likely reach 70 billion dollars in the coming year.

11. Local, State, and Federal governments will have to apply themselves to a great backlog of necessary public works in the years immediately ahead.

12. The speculative excesses that have preceded, and to many minds have largely precipitated, the depressions of the past, are absent.

3. American population increases, discounting war, are anticipated averaging 2.7 million new consumers annually.

14. "Guarantee" factors, such as mortgage stabilization and secured bank deposits, make recurrence of some past evils unlikely if not impossible.

The impetus behind unwarranted pessimism today is largely psychological, according to Mr. Hoffman. It is reminiscent of a doleful attitude on the part of economic pundits during the period from 1943 to the end of World War II.

With glee on the part of the Russians, and gloom here at home, economic forecasts predicted inevitable collapse within a year after the war's end.

That bleak prospect was thwarted then by men who refused to accept "wars and depressions as being of divine origin."

The same kind of counteraction is needed *today*—when our nation is making a major transition from a sellers' to a buyers' market.

This transition we believe, will be made quickly, with boldness, some risk, and hard work.

In other words, we have confidence that leading businessmen in OUR industry will take the bull by the horns and lead him to the Trough of Plenty.

Other businesses may have rough sledding next year; but ours shouldn't.

How to Tell Time By the Stars

To anyone who's foolish enough to Get Lost on hunting or fishing trips, and doesn't know what time it is, or where they are, here's a valuable formula.

Locate the Big Dipper in the night sky, and spot the two stars which form the front end. Always they point toward the North Star.

North Star is the center of an infallible celestial clock. The two front-edge Big Dipper stars are its hands. Their position at any moment should reveal the time to the nearest quarter-hour (if you use your imagination by placing these stars on a mental clock face).

Wanna be more accurate? Add the number of months since January first. Multiply by two, and subtract the result from 16. If the answer is greater than 16 subtract it from 40. That should give you the exact minute—providing you can reconstruct these figures on your imaginary clock.

After all this fooling around you should know what time it is . . . p.m. If it is more than 12 o'clock, subtract 12 and you'll have a.m. time (depending on whether you are east or west of the central meridian of your time zone).

Are you still with us? Anyway, what fisherman or hunter cares what time it is?

Last-Minute Quips

Chip on the shoulder indicates wood in the head.

We do not stop playing because we grow old. We grow old because we stop playing.—*Schleswig* (town) *Leader.*

Wisdom is knowing the difference between pulling your weight and throwing it around.—*Changing Times.*

Be thrifty when you're young. Then, when you're old, you'll be able to afford things only the young can enjoy.

"How do you choose your bright new executives?" Henry Ford II was asked.

Young Henry responded: "Who ought to be the tenor in a quartet? Obviously, the man with a born tenor voice."

air conditioning systems for complete comfort cooling

from nearby Allegheny River is employed at the rate of 13,800 gpm.

Air-circulation apparatus in penthouses feeds the upper halves of the buildings, while duplicate installations in the basements feed the lower half of each structure. This eliminates bulky ductwork, with the result that maximum space is available for tenant use on each floor.

ECONOMY IS FEATURE OF THE SYSTEM

In discussing reasons for installing a central system of this type, R. W. Robinson, Operating Manager of the Gateway Center, explained that:

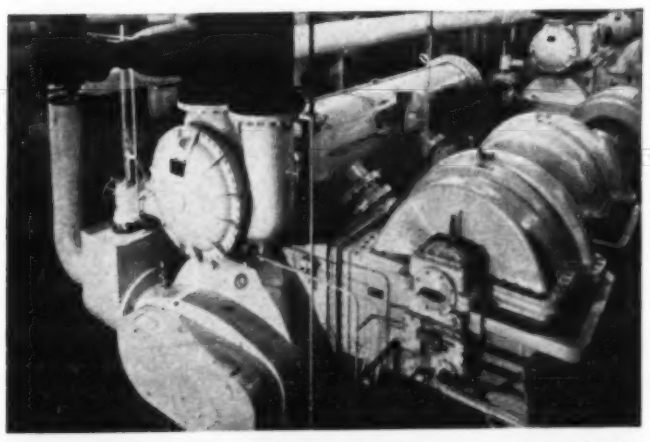
1. It requires minimum operating personnel. One man can check the entire system.
2. Piping to a single condenser and chilled water supply to the central plant is less costly than piping to isolated refrigeration rooms . . . effecting a big saving in piping, equipment and labor.
3. It operates more economically under partial load conditions. One compressor at full load, with two units entirely cut out, is less expensive than three operating at one-third load each.

HUGE MARKET FOR EQUIPMENT

Although installations of the Gateway Center magnitude are relatively few in number, the fact remains that today *all* new commercial office buildings and other structures are being air conditioned throughout. Comfort cooling has become a must and the equipment market potential is tremendous. Owners of thousands of structures already built have come to recognize that they will have to air condition their properties to protect their investments.

Chief Engineer Joseph R. McCorkle (left) and W. H. Lindsey of the Maintenance Staff check one of the high-pressure window units.

So the outlook is very promising, and the smart thing to do—*right now*—is to comb the field yourself. Line up your best prospects . . . plan a campaign to sell them on the benefits and values of modern air conditioning . . . and how you can be of service to them. Point out the importance of choosing the right equipment, designed to operate with Du Pont FREON® fluorinated hydrocarbon refrigerants. Explain that these refrigerants are safe . . . nonflammable, nonexplosive, noncorrosive, virtually nontoxic . . . and of the uniform quality that only scientific, laboratory-controlled methods of manufacture can produce. In addition, "Freon" refrigerants fully comply with building codes everywhere. E. I. du Pont de Nemours & Co. (Inc.), "Kinetic" Chemicals Division, Wilmington 98, Delaware.



Shipshape basement equipment room houses three Carrier centrifugal compressors of 1500-ton capacity each.

"FREON"
SAFE REFRIGERANTS
KINETIC
"Freon" is Du Pont's registered trademark for its fluorinated hydrocarbon refrigerants.
DU PONT
REG. U.S. PAT. OFF.
BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

ROTARY SEAL Replacement Units
AT ALL LEADING JOBBERS
For Commercial, Semi-Commercial, Air Conditioning and Home Refrigerator Compressors.. proven by 23 years of outstanding performance. Units available for all standard makes.
Easy to install
Efficient in operation
Simple in construction
Economical
THE ROTARY SEAL COMPANY mechanical seals for rotating shafts
2026 NORTH LARRABEE ST.
CHICAGO 14, ILLINOIS, U.S.A.
CANADIAN AGENT: 2025 ADDINGTON AVE., MONTREAL 28, QUEBEC

Fan Motors for Room Coolers

(Part 1) *Advantages, Disadvantages of Using Shaded Pole Motors In Room Conditioners Outlined by Morgan of Fedders-Quigan*

By R. W. Morgan, Director of Engineering, Fedders-Quigan Corp.

What air conditioning engineers would like to see in fan motor designs and some of the problems encountered with present designs outlined in a paper by R. W. Morgan, director of engineers for Fedders-Quigan Corp.

Under the title "The Application of Shaded Pole Motors to Room Air Conditioners," it was presented by Morgan at the Conference on Application of Motors to Air Moving Equipment held in Fort Wayne, Ind. by the Fort Wayne section and the Committee on Rotating Machinery of the American Institute of Electrical Engineers. This is Part I of Morgan's paper; other instalments will appear in future issues of the NEWS.

By way of introduction, it might be well to bring to the attention of the audience the remarkable sales growth of the room air conditioner in recent years. In fact, the rate of growth would have been even more remarkable had the fan motor manufacturers been able to meet the demand. In spite of shortages in motors, compressors, condenser and evaporator coils, the growth has far exceeded the most optimistic guesses.

Perhaps the best way to show this growth is to compare the past several years' sales with the rate of growth of electric refrigerators in the early years of their development. Fig. 1 shows yearly sales of room air conditioners since 1938. Acceptance did not show any appreciable gain until after 1945 when sales were around 5,000. The growth is shown through 1953 which is estimated to be over 1,000,000 based on the 900,000 shipments up to Sept. 1, 1953.

Yearly refrigerator sales are also shown starting after their sales reached the 5,000 mark (1921). It can be seen the room air conditioner rate is much more steep than that of electric refrigerators.

Another interesting comparison sales-wise is to compare the room air conditioner with other low saturation appliances such as the home freezer, electric dishwasher, food waste disposers, and clothes dryers. Fig. 2 shows this comparison using 1947 sales as the base. It can be seen that the room air conditioner has outstripped all of these in its rate of growth.

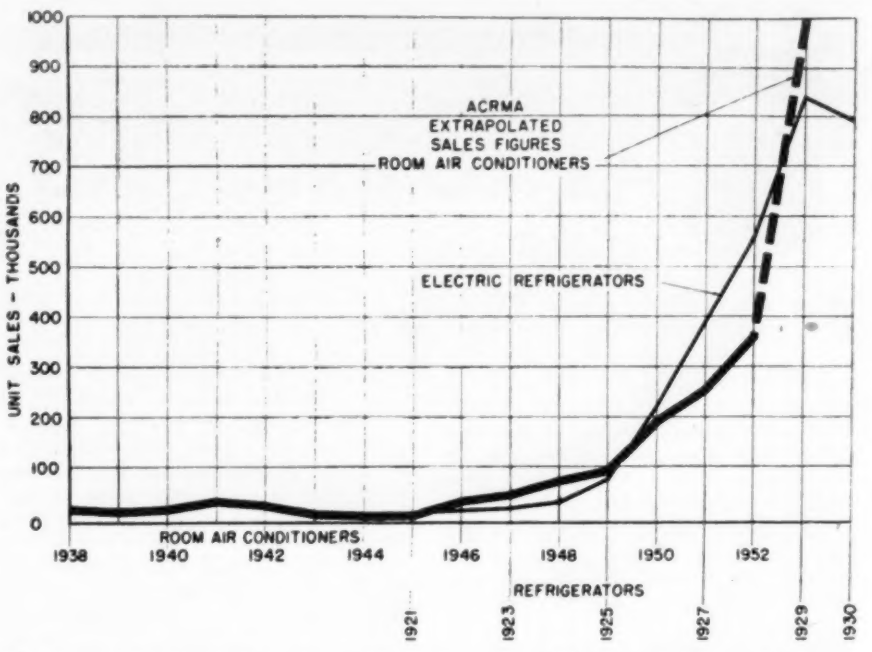


FIG. 1 shows the comparative sales growth of room air conditioners and electric refrigerators.

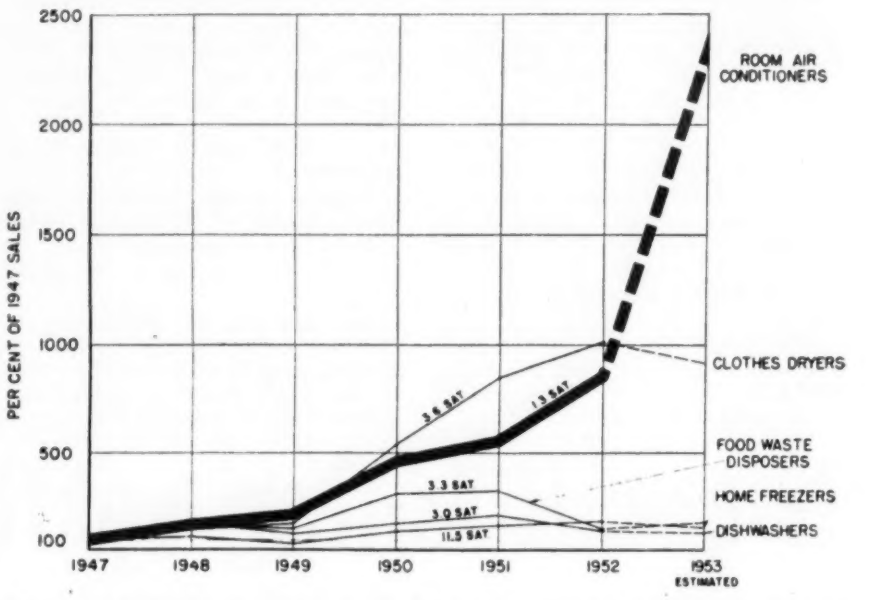


FIG. 2 is a comparison of sales since 1947 of such low saturation appliances as room air conditioners, clothes dryers, garbage disposers, home freezers, and dishwashers.

The per cent saturation of these various appliances is clearly shown in Table 1. It will be noted that this comparison is not strictly true due to the fact that there may be more than one room air conditioner per home whereas the other appliances are usually limited to one sale per home.

Motor Manufacturers Should Study Growth Curves

The motor manufacturer would do well to carefully look over these growth curves and calculate the present market for fan motors. He should also bear in mind that perhaps more than half of these units sold have two motors per conditioner. It might also be interesting for him to make a mental extrapolation of the growth curves for the next several years to get an idea of the potential market.

An analysis of 1953 room air conditioner designs based on the tabulation appearing in the April Issue of *Refrigerating Engineering* indicates that there are over 50 active merchandisers and 50 prime manufacturers. Approximately 150 different models are represented in the 1953 market. In regard to the application of fan motor types in the various models, an analysis shows that approximately 62% of the designs employed single motors with double shaft extensions for driving the evaporator and condenser fans.

Approximately 35% of Units Employ 2 Motors

Approximately 35% of the designs employed two motors—one for the evaporator fan and one for the condenser fan. This multiple motor design gives the designer more flexibility in arrangement of components. It may also result in lower fan motor current draw if propeller type fans are used in conjunction with low velocity refrigerant coils.

In general, better fresh air ventilation is obtained with the two motor arrangement since the evaporator fan can be run separately, reducing the noise level, drawing less current, and allowing winter operation since there is no chance for the condensate disposal ring usually integral with the condenser fan freezing in the base pan of the air conditioner.

Another interesting fact is that approximately 65% of the designs employed single speed fan motors and 35%, two or three speed. Although by far the greatest majority were of the shaded pole type, there were some capacitor-type motors used as well as some split phase motors, particularly in the larger capacity units. This predominance is due to the following advantages:

1. Low in cost.
2. Simple in construction.
3. Extremely rugged and reliable, having no commutator, brushes, switch, collector rings, governor, or any other sort of sliding contact making or breaking the current.
4. Can be stalled indefinitely without harm in most applications.
5. Windings can be tapped for two or more speed operation.

However, there are also many disadvantages, as follows:

1. Low in efficiency.
2. Wide variation in performance characteristics due to manufacturing variations and tolerances.
3. Must be applied with air drawn over motor.
4. High bearing temperatures bringing about lubrication problems and low life.
5. Do not lend themselves to two speed operation without serious compromise due to instability and being sensitive to voltage variations.
6. Low power factor.

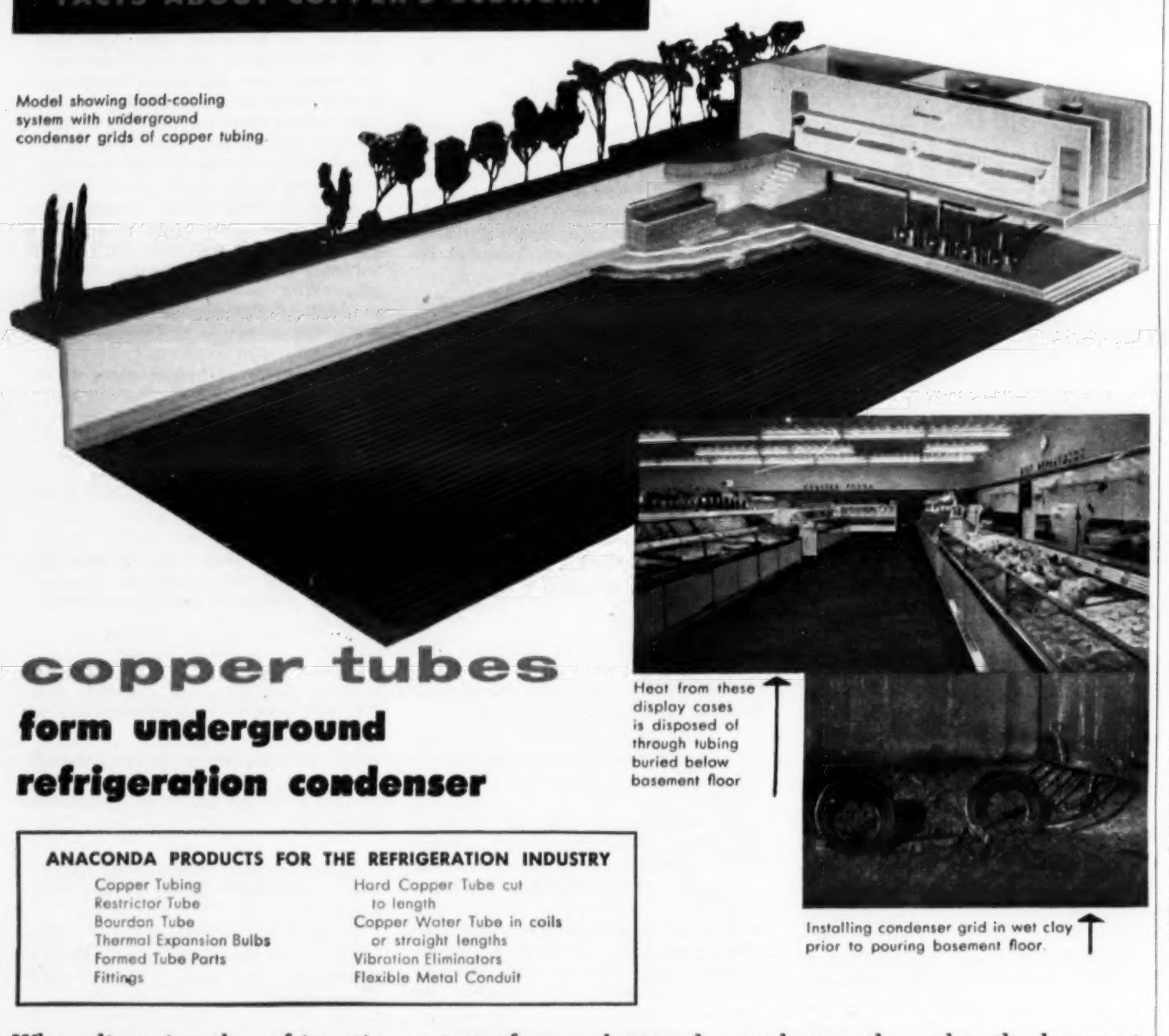
The size of the fan motors ranged from $\frac{1}{150}$ hp. to $\frac{1}{6}$ hp. The majority of the motors were of the 6-pole type with full load speeds of 1,050 r.p.m. There were also some 4-pole motors used having rated speeds of 1,550 to 1,650 r.p.m.

Motor Construction Varies

The construction of the shaded pole motors used in room air condi-

(Continued on next page)

FACTS ABOUT COPPER'S ECONOMY



Model showing food-cooling system with underground condenser grids of copper tubing.

Heat from these display cases is disposed of through tubing buried below basement floor

Installing condenser grid in wet clay prior to pouring basement floor.

copper tubes form underground refrigeration condenser

ANACONDA PRODUCTS FOR THE REFRIGERATION INDUSTRY

Copper Tubing
Restrictor Tube
Bourdon Tube
Thermal Expansion Bulbs
Formed Tube Parts
Fittings
Hard Copper Tube cut to length
Copper Water Tube in coils or straight lengths
Vibration Eliminators
Flexible Metal Conduit

When discussing the refrigeration system of a planned new supermarket, the owner stipulated:

1—Low operating costs
2—Minimum use of city water
3—Dry basement storage facilities

The Charlton brothers of the Temperature Equipment Company, Hartford, met all 3 requirements very successfully and to the owner's complete satisfaction.

The system was devised so that earth instead of water is used as the cooling medium. Copper tube grids, installed in the ground before the concrete basement floor was poured, serve as the condenser. The surrounding damp earth efficiently absorbs the heat and enough warmth reaches the basement floor to prevent the accumulation of moisture on its surface.

In the first year of operation the owner estimates a saving of $750 in water charges alone, plus the added savings afforded by the dry basement in eliminating moisture damage to stored goods. It's another example of the versatility of ANACONDA Copper Tubes for all types of plumbing, heating and refrigeration piping.

A complete description of this installation will be gladly forwarded on request. The American Brass Company, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

B225A

modern piping calls for ANACONDA® copper tubes

INTERNATIONAL® AIR Conditioner COVERS

The market's everywhere, ready and waiting, and over-growing for these new International Air Conditioner Covers. Every air conditioner needs one — no owner can do without it — protects against rain, snow, rust, drafts and dirt—saves costly servicing and repairs. Fits all air conditioners (21 custom made models to choose from). Attaches in a jiffy — fits perfectly. Waterproof, flame-resistant, self-extinguishing. Neutral tone durably stitched with black plastic binding and reinforced with stitched-in metal stays.

Individually boxed in envelope type package. To retail from $6.45 to $8.45.

Write for price list.

INTERNATIONAL AIR CONDITIONER COVER
39 Gt. Jones St. New York 12, N. Y.

TABLE 1—INDEX OF SATURATION, JANUARY, 1953
(Total Wired Homes 42,306,600)

	Number of Homes With	Percentages of Wired Homes	Number of Homes Without	Percentages of Wired Homes
Air Conditioners, Room	560,100	1.3	41,746,500	98.7
Dishwashers, Electric	1,253,000	3.0	41,053,600	97.0
Dryers, Clothes, Elec. & Gas	1,524,300	3.6	40,782,300	96.4
Food Waste Units	1,379,300	3.3	40,927,300	96.7
Freezers	4,885,000	11.5	37,421,000	88.5

Shaded Pole Motor Construction Varies--

(Continued from preceding page)

tioner designs varies considerably depending upon the manufacturer. The windings used are for the various common electrical characteristics, namely, 115 volt, 50 and 60 cycle; 230 volt, 50 and 60 cycle; and 208 volt, 60 cycle. The 115 volt, 60 cycle, is by far the most predominant, but the number of 230-volt and 208-volt motors is increasing rapidly.

In general, formex wire is used for the windings with motor leads taped in place. All points of high voltage difference are insulated and the entire stator dipped in insulating varnish. Some manufacturers double dip the windings for added dielectric strength, particularly for condenser fan motors, which must operate in an atmosphere highly saturated with moisture. The motor leads must conform to UL standards and are usually POSJ appliance wiring provided with a 75° C. covering of the oil and heat resisting type. Arcless quick connectors are usually provided at the ends of the motor leads for convenience in wiring.

Overload Protection

Evaporator fan motors can usually be protected from overload by the inherent impedance and resistance of the winding. Condenser fan motors and double shaft extension motors usually are protected against overload by means of a thermostatic switch in series with the winding and slipped into a slot in the stator frame. UL standards call for a 15-day locked rotor test on all fan motors. The winding temperature cannot exceed 150° C. if open or 150° C. shell temperature if totally enclosed. Under maximum normal running conditions (104° F. 80° w.b. inside and outside) windings cannot exceed 105° C.

As mentioned above, the shaded pole motor design usually incorporates salient poles four or six in number. Magnetic wedges are sometimes used to reduce magnetic losses and increase efficiency. A new type shaded pole motor was introduced this year, using the shaded pole principal with a reluctance start feature. It is said this type motor has higher efficiency and improved speed voltage characteristics.

Frame Design Is Not Same

The frame design of shaded pole motors varies considerably with the manufacturer. Four-pole unit bearing motors up to 16 watts are available with cast iron frames. The bearings are of cast iron. These motors are usually permanently sealed and are usually good for years of dependable operation. This motor was originally developed for forced draft hermetic refrigerators and has an enviable service record.

Another style unit bearing motor in horsepowers up to ½ both 4 and 6 pole, is made with a die cast frame. This motor is also fan cooled. There is no provision for oiling since it is permanently lubricated for life. It is mounted in rubber similar to larger fractional horsepower motors. The over-all length of this motor makes it difficult to apply in compact air conditioner designs.

Another design uses two tin base babbitt sleeve type bearings, die cast end bells, and a "Unicast" stator section. This motor is called a 20,000-hour motor. Provision is made for oiling, however. This motor is of the short, large diameter frame, pancake type design, a very desirable feature for space saving. This motor is also mounted in rubber.

Another two-bearing construction commonly used employs stamped end bells with two sintered bronze self-aligning bearings. Usually these are of the oiling type. Attempts have been made to increase the life without oiling by adding additional felts for increased oil capacity or storing oil in a plastic reservoir. A more detailed description of these bearing designs will be covered later in discussing lubrication.

Still another construction is a two-bearing construction using cast iron end bells with rigid cast iron bearings.

Oil holes are provided for occasionally adding oil.

(To Be Continued)

SUPER-FLO
FILTER-DRIER

MOLDED REMCAL DRYING
FIBERGLAS DEPTH FILTERING

Check Super-Flo's amazing low price, for both original equipment and replacement, against ordinary driers which do not have Super-Flo molded drying elements, massive fiberglas depth filters and spun-end copper shells. Available to the trade through wholesalers everywhere.

REMCO INCORPORATED
ZELIENOPLE, PA.

Phileo Appoints Boyd New Denver Distributor

DENVER—Boyd Distributing Co.'s appointment as distributor of Philco major appliances, radio, and television in Colorado, southern Wyoming, and western Nebraska has been announced by Cecil H. Boyd, president.

Walter Slagle Co. formerly distributed Philco products in this same area.

Boyd Distributing gave up its franchises for Norge appliances and Motorola products.

Gauthier To Manage New Remington Personnel Dept.

AUBURN, N. Y.—Due to a general expansion program which will require a considerable increase in personnel, Remington Corp. has appointed Philip H. Gauthier as personnel manager, Herbert L. Laube, president, announced recently.

Gauthier heads a newly-formed department and will personally supervise the recruiting and selection of plant and office employes engaged in the design, manufacture, and sale of room air conditioners.

A graduate of the University of Buffalo, Gauthier was with Dunlop Tire & Rubber Co., Buffalo, for 17 years. For 10 years he has been assistant personnel manager for that firm.

Siebenthaler To Represent Viking In Mo.-Kans. Area

CLEVELAND — Sales Manager Frank Gibbons of Viking Air Conditioning Corp. announces the appointment of Bill L. Siebenthaler to the Viking sales staff.

He will represent the Cleveland manufacturer of blowers, fans, humidifiers, and dehumidifiers in the Missouri-Kansas area.

Siebenthaler joins Viking from Fairbanks Morse of Kansas City, Mo., where he was assistant to the manager of the Pump Div. Previously, he was with the sales department of General Appliance Co., Joplin, Mo. A graduate of the University of Missouri, Siebenthaler has served in the Submarine Service.

NEW SMALL-SIZE G-E STARTER

Specifically for Air Conditioning and Refrigeration Applications

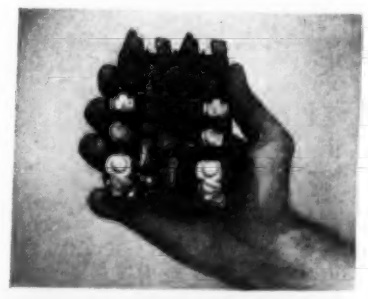
Here's the starter which incorporates the features you've asked for. It's G.E.'s new magnetic starter for the air conditioning and refrigeration industry.

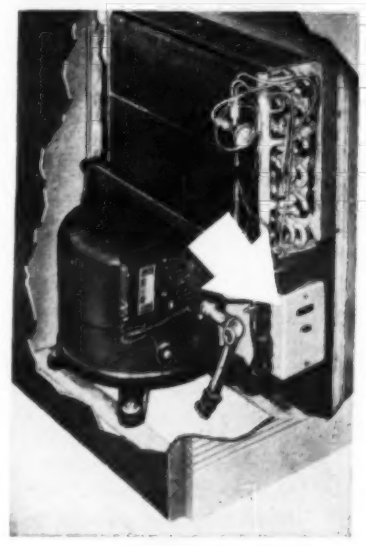
SMALLER SIZE You'll realize greater space savings with the new G-E starter. The new small size permits greater design flexibility. It's functionally compact . . . no waste space to clutter up your cooling unit . . . yet ample wiring space for installation.

ECONOMICAL Streamlined to reduce your costs, the new starter is designed specifically for air conditioning and refrigeration and only the necessary features for these applications are included. Features of standard motor starters which do not apply were eliminated, thus making this new starter more economical.

BETTER PROTECTION New "quick-tripping" overload relays provide positive protection for your hermetic-type compressor motor. The new relays allow the motor to deliver its maximum power without premature tripping, yet protect against running and stalled conditions.

Standard relays are also available for open-type motors.





ATTRACTIVE APPEARANCE Neat, compact, attractive in appearance, the new starter is designed to complement your modern equipment. To prevent rust and corrosion, all surfaces are phosphate-treated before applying the neutral gray finish.

EASIER TO INSTALL Unit is accessible from three sides when enclosure cover is removed. Large terminal screws are easy to wire.

A guide hole positions the starter unit for mounting to the enclosure. Just hook the unit into the guide hole. Slotted grooves slide easily onto mounting screws. Simply tighten the two mounting screws.

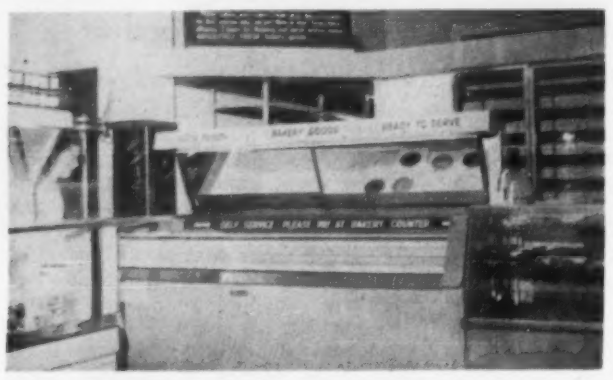
Bulletin Gives Details

For complete information, contact your nearest General Electric Apparatus Sales Office, or write Section 730-50, General Electric Company, Schenectady, N. Y. Ask for Bulletin GEA-6064.

Upper photo shows small size. In the lower photo, new magnetic starter is shown mounted in a typical cooling unit.

GENERAL ELECTRIC

Commercial Refrigeration



AN 8-FT. COMMERCIAL frozen food case was adapted by Warner-Noll Bakery, St. Louis, for use to display its frozen specialties. Blond veneer covering makes it blend with other cases.

Standard Open Case Serves as Display Unit For Bakery's Frozen Cakes, Specialties

ST. LOUIS—An unusual display refrigerator in the St. Louis area has sharply boosted sales of sharp frozen cakes, pies, and similar desserts for the Warner-Noll Bakery, Hampton Village.

The bakery was completely remodeled a year ago with installation of blondewood display counters, wallcases. During modernization, Elmer Warner, owner, decided to exploit the frozen baked goods by adding the advantages of self-service.

In order to make possible the maintenance of a large stock of sharp frozen cakes and other desserts, Warner went to the R. & R. Equipment Co., fixture dealers, who remodeled a Koch standard open display case, originally built for frozen foods, into an open, self-service display unit.

Covered with a veneer of the same blonde oak as used in the rest of the bakery fixtures, the big refrigerator is 8 feet long, with a refrigerated area 3 ft. deep by 3 ft. wide. There is ample space for approximately 6 doz. cakes, which are held at 10° F.

Above the case is a sign which points out "These cakes are frozen one hour after baking. For this reason you can put them in your home freezer, allowing two hours for thawing and serve at any time. Absolutely fresh bakery goods."

Through the winter months, the case also displays large numbers of whipped cream cakes and ice cream-cake specialties which Warner-Noll features for parties, teas, and other entertainment.

The major advantage of the system is the self-service factor, according to Warner. "Because of extremely heavy sales volume on Thursday, Friday, and Saturday, it would be almost impossible for us to meet customer demand on a clerk-service basis," he said. "We simply keep a complete stock in self-serve display cases."

This way, meeting the load is merely a matter of transferring frozen cakes from the walk-in box to the display unit as rapidly as necessary. Our customers are used to helping themselves, and frozen cakes, pies, and whipped cream specialties are now so well accepted by the public that it does not require particular salesmanship to turn them over."

Hoesel, Former Peerless Chief Engineer, Dies

CHICAGO — Anthony F. Hoesel, who was with Peerless of America, Inc. from 1921 until November, 1950 as chief engineer, died Dec. 1. He was 63.

Hoesel, who was recently associated with Blue M Electric Co. of Chicago, held many patents in the refrigeration and air conditioning industry. He leaves a wife, son, and daughter.

Distributor Visits with First Lady

NAT SILVERSTONE of San Francisco, left, West Coast distributor of refrigeration equipment, was entertained at the White House in Washington recently during the National Conference of Christians and Jews.

He is shown above chatting on the White House portico with, left to right, Dr. Sterling Brown of New York City, general director of the conference; Thomas E. Braniff of Dallas, Catholic co-chairman of the conference; Mrs. Dwight D. Eisenhower; Oscar L. Chapman of Washington, vice chairman of the conference for the Southeast region; and Dr. Everett B. Clinchy of New York City, conference president. Silverstone is a distributor for Bally Case and Cooler Co., Bally, Pa.

Revised City Code Requires More Use of Refrigeration

JAMESTOWN, N. Y. — The City Health Board has adopted a revised city sanitary code that calls for increased use of refrigeration in the storage of certain foods by concerns selling them for public consumption.

The code has been sent to City Council for approval.

No fish or other odorous foods will be allowed to be stored in refrigeration with ice cream or butter. The code also requires that milk, cream, or other dairy products be sold in individual, capped containers.

67 Ft. of 'Em

Loblaw's Features Frozen Food Cases In New Supermarket

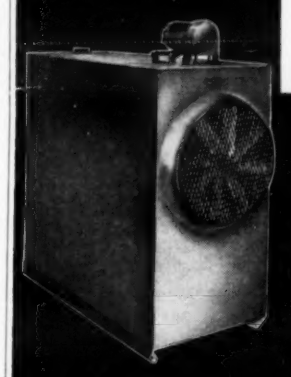
NIAGARA FALLS, N. Y.—A 67-ft. installation of frozen food cases is a feature the newly opened Loblaw supermarket at 1035 Cleveland Ave. The cases offer an unusually large selection of frozen fruits, vegetables, juices, ice cream, poultry, fish, and specialty products.

The Loblaw supermarket also has a large self-service refrigerated meat department. Meat cases are kept filled hourly with fresh cuts from the air conditioned meat cutting and wrapping room.

The large fruit and vegetable section also is built around refrigerated self-service counters. Thirty-two feet of refrigerated cases are devoted to the display of cheese alone.

20-Year Guarantee!

ON THE WETTED DECK SURFACE



HALSTEAD & MITCHELL COOLING TOWERS

2 to 100 tons

"Built like a Battleship"—economical, lastworthy. Pressure-treated wood in wetted deck surface guarantees against rotting or fungi growth. Stainless steel fan and shaft, plus individual cabinet coatings of Vinsynite, Vinyl Aluminum and chlorinated rubber, add important years of life.

Wholesalers in Principal Cities

Halstead & Mitchell

BESSEMER BLDG. PITTSBURGH 22, PA.

NEW PRODUCTS?
Turn to "What's New" Page for useful information on new products.

IF YOU WERE Your Prospect

which deal would YOU buy?

Feature Time Payments to close more sales with the COMMERCIAL CREDIT PLAN

MORE AND MORE prospects for commercial refrigerating and air conditioning equipment are becoming, of necessity, TIME BUYERS. Because of their cash position it's the only way many can buy your equipment. The COMMERCIAL CREDIT PLAN helps close sales . . . improves your cash position by avoiding accounts receivable. And you turn your credit and collection worries over to COMMERCIAL CREDIT. For complete details, facts and figures, write COMMERCIAL CREDIT CORP., 14 Light Street, Baltimore 2, Md. or our nearest office.

COMMERCIAL CREDIT PLAN

COMMERCIAL CREDIT CORPORATION

A service offered through subsidiaries of Commercial Credit Company, Baltimore . . . Capital and Surplus over $135,000,000 . . . offices in principal cities of the United States and Canada.

Above: St. John's Hospital, Springfield, Mo. Right: 3 of 5 Schnacke Compressors which air-condition four departments of the hospital.

SCHNACKE INTEGRAL UNIT STEP CONTROL AIR CONDITIONING

meets the exacting demands of modern hospitals

When St. John's selected SCHNACKE Compressors to air-condition its laboratory, surgery, nursery and coffee shop, the management was availing itself of the experience of nearly 40 other modern hospitals and sanitariums.

Four separate systems using five compressors assure that possible mechanical troubles will not likely cause all systems to be down at once. Multiple compressors as used here also provide more accurate zone control with fewer mechanical problems involved.

WRITE, WIRE or PHONE FOR HELPFUL ENGINEERING DATA

1101 N. Governor St. SCHNACKE, INC. Evansville, Ind.

Mitchell Announces 'Weather Prophet' Direct Mail Piece

CHICAGO—The "Weather Prophet," a new customer direct mail premium, will be available soon to dealers of Mitchell room air conditioners, it was announced recently by Howard Haas, advertising director of the Mitchell Mfg. Co.

Designed for convenient mounting in or outside the home, the "Weather Prophet" predicts major weather changes 12 hours in advance. It is a natural giveaway to induce customers to come into a Mitchell dealer's store for a demonstration, Haas said.

The giveaway, printed in two colors, invites customers to "Be Your Own Weatherman!" Mitchell's name is printed on the front of the "Weather Prophet," while the back reads "Compliments of Your Mitchell Dealer."

McElwain Manages Cooling Division for Perfection

CLEVELAND—John S. McElwain has been named by Perfection Stove Co. to manage its new commercial and industrial room air conditioner sales division.

J. S. McElwain

Previously, McElwain was sales manager for the Cleveland Air Conditioning Corp. and for Avery Products Co.

McElwain will make his headquarters at Perfection's home offices in Cleveland.

Boston Company Named New Remington Distributor

AUBURN, N. Y.—The Air Conditioning Div. of Remington Corp. has appointed Massachusetts Gas & Electric Light Supply Co. as its new distributor of window and console room air conditioners for eastern Massachusetts, all of New Hampshire, and southern Maine, it was announced by M. L. Judd, general sales manager.

The contract was signed by Louis F. White, Remington's New England representative and Arnold Bronstein, Mass. Gas & Electric sales manager.

Other officers of the company are Charles H. Weinreb, president and treasurer, and Efren Weinreb, vice president. Monroe H. Sheffield has been appointed as air conditioning specialist.

This 38-year-old appliance distributorship, one of the oldest and largest in New England, has its main office in Boston, with branches in Brockton, Malden, New Bedford, and Watertown, Mass.; Portsmouth, N. H.; and southern Maine.

Air Conditioning In Homes Improves Health Of Families, University Physician Reports

DETROIT—Air conditioners in the home make a definite contribution to family health as well as comfort, according to a midwestern university hospital physician.

In a medical report prepared for Kelvinator, the physician said there are at least three definite health-promoting qualities easily attributed to air conditioning. These are relief to persons afflicted with hay fever or other allergies, lessening of the disturbances caused by noise, and aiding air circulation.

"For years, hay fever victims have found that being in an air conditioned room helps them," said the physician, long identified with public health and air conditioning. "Since a great many pollens are air-borne, an air conditioner filters the air and eliminates or at least reduces the excitant. Temperature reduction also helps an afflicted person."

The known cleansing qualities of air conditioners in removal of dust and soot from the air also aid allergic persons.

Hospitals have recognized the benefits of air conditioners for many years and many offer rooms thus equipped.

The survey declared that room air conditioners also "offer the opportunity for keeping closed all windows and doors, thus providing a beneficent sound barrier.

"Under practically all circumstances, either urban or rural, outside noises are present, disrupting and particularly interfering with sleep. Suitable air conditioning affords some measure of relief from the disturbances of noise," the report said.

The survey also credited air conditioners with aiding the movement of air, "facilitating evaporation from skin surfaces and assuring the proper eliminating of excess bodily heat."

The report continued:

"Long before the days of air conditioning, the erector of larger houses was much concerned to provide 'breezeways' or 'air sweeps.' In compact, modern housing such provisions are largely impossible. The superior substitute is air conditioning. The only worth of the common household fan is to produce air motion. When provisions for increased air motion become a part of mechanical air conditioning, health is conserved in some measure."

Other ways that air conditioners are beneficial to health, the report stated, include "protection against dehydration, the avoidance of fatigue from undue sodium chloride losses, escape from emotional disturbances, the banishment of offensive odors, and the avoidance of lower body resistance to the diseases of mucous membranes incident to detrimental surface drying.

"If household air conditioning introduced nothing more than comfort of body and peace of mind, fully it would be justified."

Newsome Air Conditioning Granted Virginia Charter

NEWPORT NEWS, Va.—Newsome Air Conditioning Co., Inc. here has obtained a charter from the Virginia State Corporation Commission to deal in air conditioning equipment and service.

Authorized maximum capitalization was listed at $200,000. W. E. Allaun, Jr., A. E. Newsome, Sr., and Thomas N. Downing were listed as the incorporators.

Buy Peerless FOR PERFORMANCE

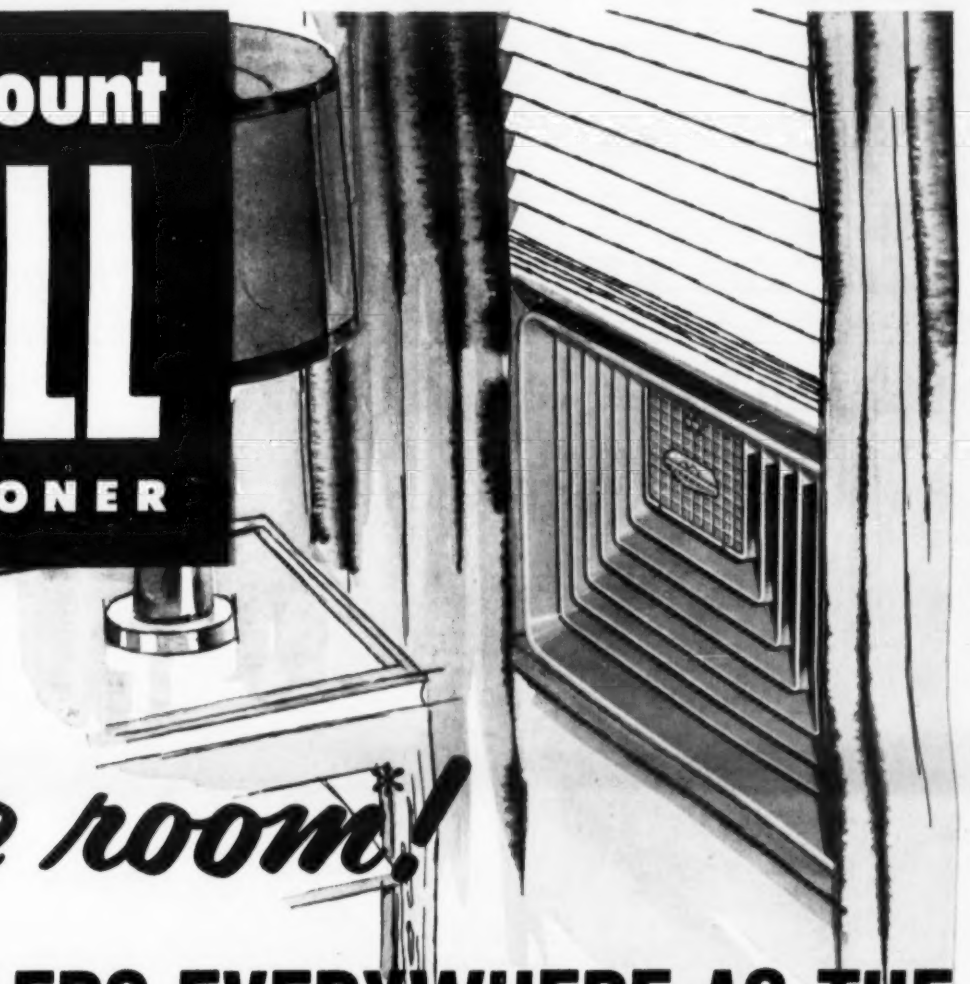
DRIP-PUMP for Condensate on Air Conditioners

The Peerless Drip-Pump solves the troublesome drainage problem—on air conditioners, coolers, refrigerators and other machines where condensate is present—by eliminating hazardous gravity drains altogether! The Drip-Pump lifts condensate *up and out, overhead* . . . saves valuable space.

Illustration shows Model DP-2 high capacity high lift pump for air conditioner applications. Also available is Model DP-1 packless centrifugal type pump, driven by "flea-power" motor . . . the ideal pump for use for dome, unit or flash coolers. Both models are ruggedly built for long, hard service; easily and quickly installed. Write for full information.

Peerless of America, Inc.
1501 No. Magnolia, Avenue
Chicago 22, Illinois, U.S.A.

The True Flush Mount
MITCHELL
ROOM AIR CONDITIONER



takes no space in the room*!

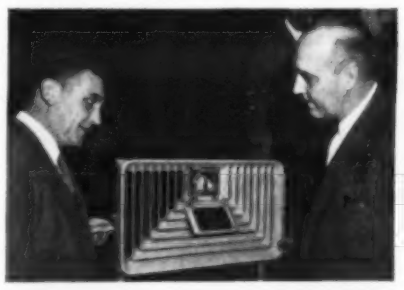
*ACCLAIMED BY DEALERS EVERYWHERE AS THE MOST IMPORTANT SALES FEATURE IN 1954!

George Scott, Commonwealth Edison Company, Chicago, Illinois. "True Flush Mount engineering and styling make an unbeatable combination."

Walter Cuevas, Foley's, Houston, Texas. "The new Mitchell look is what the housewife has been wanting. Once she sees it, it's a sale for Mitchell."

Jules Smith and Harry Stein, Davega Stores, New York. "Mitchell's new flush mount is truly spectacular! Now it takes no space in the room and blends with decorating."

W. E. Price, Tampa Appliance, Tampa, Florida. "True Flush Mount is a tremendous advantage over unattractive space-stealing units. There's never been anything like it."



E. H. Gardiner, Texas Power & Light Co., Dallas, Texas. "A survey of the Southwestern market definitely showed they wanted true flush mounted type of units."

J. C. Rowland, Rowland Appliance, Savannah, Ga. "It's the greatest feature yet! I increased my Mitchell order when I learned it takes no space in the room."

MITCHELL MFG. CO., DEPT. AC-1
2525 N. Clybourn Ave., Chicago 14, Illinois

Gentlemen:
Please send complete details about the all new 1954 MITCHELL line. Include information on how I can become a MITCHELL FRANCHISED DEALER and get full benefits of your Dealer Distributor Protection Plan.

Name.....
Store Name.....
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They'll Do It Every Time . . . . By Jimmy Hatlo

MY IDEA IS TO COAT THE PAPER WITH PHOSPHORUS-- IT WOULD GLOW IN THE DARK--CUT DOWN ON LIGHT BILLS...
I BEEN EXPERIMENTING WITH THIS RUBBERIZED BLOTTER! TOUGHER, LASTS LONGER, MORE RESILIENT...
REST ASSURED I'LL LAY BOTH YOUR SUGGESTIONS BEFORE THE BIG BOSS--CREDIT WHERE CREDIT IS DUE, I ALWAYS SAY...
PRIVATE
L. B. ANTHILL
SO--THEN ANTHILL, THE STRAWBOSS, PASSES THE BRAIN-CHILDREN ON TO THE BIGWHEEL--BUT HOW?
THANX AND A TIP OF THE HAT TO IRENE LUCKEY, 405 4TH AVE., BARABOO, WISC.
PHOSPHOROUS PAPER...NO-O-O! IMPRACTICAL--BUT RUBBERIZED BLOTTERS--SOUNDS COMMERCIALLY SOUND...VERY GOOD, ANTHILL... THAT HAS POSSIBILITIES!
MY THINKING EXACTLY, CHIEF--I TOLD JIMSON WHEN HE BEGGED ME TO PRESENT HIS PHOSPHORUS IDEA TO YOU--I SAID--"NOT PRACTICAL, JIMSON"...UH--THE BLOTTER--UH--IS MY OWN IDEA!
JIMMY HATLO
10-16
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Have You READ *'Peace and Progress'* Yet?

"I just can't risk food spoilage!"

No merchant can risk food spoilage . . . and no manufacturer of frozen food display cabinets can risk using unreliable condensing units in the equipment he builds. That's why the name Tecumseh has become synonymous with dependability, and that is why more than 2/3 of all manufacturers of frozen food cabinets specify Tecumseh as standard equipment on all the models they make.

Of course there's a reason! Manufacturers know that Tecumseh's internal spring mounting and forced feed lubrication gives them a smooth, quiet and vibrationless unit that they can rely upon for low-cost, trouble-free operation. Yes, customer satisfaction can be assured when a Tecumseh Hermetic is specified as standard equipment in their frozen food cabinets.

No wonder Tecumseh's present production is over 200,000 units per month, and today there are more than 8,000,000 Tecumsehs in the hands of satisfied users.

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TECUMSEH, MICH. Company

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AIR CONDITIONING AND REFRIGERATION News

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F. M. COCKRELL, *Founder*

'The Conscience of the Industry'

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"I have always felt that whatever the Divine Providence permitted to occur I was not too proud to report. The people are not served by pussyfooting, or by that sort of journalism in which nobody will ask who is the editor of a paper or the writer of an article, and nobody will care."—*Charles A. Dana.*

Refrigerated Vending Machines —A Growing Business

UNNOTICED, almost—in the welter of upcoming commercial refrigeration products—is the refrigerated vending machine. Not many firms make them; few distributors sell them. But what a business they've become!

Confidential data from manufacturers of component parts (checked and cross-checked) reveal that production of refrigerated vending machines is at a rate which would make them the No. 3 end-use item in the refrigeration industry. They rank behind household refrigerators and freezers, but ahead of room coolers, according to best available present information.

Moreover, there is every indication that this business will continue to grow.

Biggest employment of refrigerated vending machines, of course, is for dispensing soft drinks. But ice cream and milk vendors are moving up fast in this league. Also, frozen foods.

Technical difficulties encountered earlier in connection with ice cream vending machines (the packages stuck together) have been licked. Hence the door now is open for packaged frozen food dispensers.

Installation of milk vending machines in apartment buildings is significant. If the idea spreads, it could well upset old patterns of milk distribution. Butter and cream supplying—especially in cities where there are a lot of multiple-housing developments and apartment dwellings—could be affected, too.

Each milk vending machine (of the type now gaining a foothold) holds 140 chilled cartons. The price to the slot-dropper normally matches the self-serve supermarket price. Always it is a few cents less than home delivery charges.

Such refrigerated vending machines are stocked by a regular route milkman. Time-of-sale studies are made at each new installation to determine when the vendor should be stocked in order to meet rush-hour demands.

Most of these refrigerated package vending machines are so designed that they could supply butter, cream, cheese, frozen vegetables, and meats, or almost any standard-size packaged food that must be kept at low temperatures.

The trend to self-service of foods is evident everywhere. High labor costs of retailing are a principle reason. Also: less waiting, more convenient shopping, and availability when stores are closed.

Vending machines, of course, are the ultimate in self-service. Hence, we can expect this portion of the refrigeration business to grow and grow and grow.

Thought Starters

The Christian church belongs to God and not to man; the church cannot become a tool of any social order, whether it be imperialist, capitalist, or communist.—SAMUEL MOFFATT.

Success has traditionally been measured in our society by one's upward mobility. We seem to have amended the Ten Commandments to read: "Thou shalt strive ever to move upward lest thou be guilty of an unforgivable sin."—EARL S. JOHNSON, University of Chicago.

From Drive-In to Dining Room—It Just Grew

RESTAURANT & BAR EQUIPMENT

A SODA FOUNTAIN occupied the space shown along the wall at the right of this picture for about six weeks. But Weldon Osborne discovered on opening day for his new Tick-Tock drive-in restaurant in Chattanooga that the soda fountain was taking up too much valuable space. So he removed it and put in more booths and a beverage cooler and water station.

HIS APPLIANCE STORE in the same shopping center got the fountain. While it is rare to see refrigerators nestled up to a thriving fountain, Osborne believes that the fountain will draw more traffic into his store and attract more attention to the appliances.

REFRIGERATION EQUIPMENT abounds in the Tick-Tock's kitchen. Along the back row is a 54-cu. ft. Tyler dough retarder and a 43-cu. ft. reach-in. In the foreground is an ice cream cabinet, a cold bain marie, and a salad refrigerator. The small room from which the cook is emerging is the restaurant's bakery. A household type refrigerator is located in there.

CHATTANOOGA, Tenn.—The Tick Tock restaurant on Ringgold Rd. in the new Osborne shopping center wasn't planned. It just grew—with some very interesting results.

Originally Weldon Osborne, who owns both the restaurant and the shopping center, planned the Tick Tock as a small drive-in to take advantage of the heavy traffic along Ringgold Rd. He figured that most of the business would be done in the patrons' cars, but decided to put a few booths and a soda fountain inside for those who did not care to eat in their cars.

Lilie & McCall, Inc., Tyler refrigeration distributor here, handled the job of equipping the restaurant. C. F. Lilie, vice president of the firm, recalls that Osborne had no more than started this much under construction than he decided there wasn't enough booth space. So he added on a dining room large enough to accommodate about 60 patrons.

Lilie had no objection to the increase in size of dining space but, he pointed out to Osborne, he now did not have enough kitchen space to handle both the dining room and the drive-in.

That was no problem to Osborne. He immediately decided to change the kitchen over to a dishwashing area, and build an entirely new kitchen, big enough to take care of the new anticipated load.

Before that was finished, Osborne decided he was going to need even more booth space. So he cut down the size of the cashier's area and put a few booths in there. And at the other end of the soda fountain section, he added lounges and a private dining room for small parties.

Then he decided to build his own walk-in refrigerator off the dishwashing section and, behind the walk-in and opening into the new kitchen, he added a separate room for baking.

All of these changes and additions were made before Osborne ever opened the doors of his drive-in restaurant for business! They represented his changing ideas of what he wanted, not changes dictated by the demands of the public.

Lilie worked right along with Osborne on this, happily watching what started out to be an order for a small drive-in mushroom into the sale of equipment for a good sized restaurant.

The refrigeration equipment that went into the new restaurant includes a 43-cu. ft. Tyler reach-in, a Tyler 54-cu. ft. dough retarder, an ice cream cabinet, a bain marie unit, and a salad refrigerator in the kitchen, another reach-in refrigerator in the bakery, a refrigeration unit and coil for the walk-in, a Stanley-Knight soda fountain and counter, and a refrigerated water station for the large dining room.

He also supplied all the booths, chairs, tables, and other equipment used by the restaurant, including an all-electric Hotpoint kitchen and a Thermaduke hot food server.

Osborne, who among the enterprises in his shopping center operates a Frigidaire dealership, also installed a Frigidaire ice maker and two 5-hp. Frigidaire package air conditioning units. The air conditioners are installed in central locations and supply cool air through ducts to the various dining rooms.

Opening day more than justified Osborne's faith in his own changing plans. Right from the very first, he found more customers demanding booth space than he had places.

So right there, he decided that his brand new soda-fountain had to go. Take it out, he told Lilie, and put in more booths.

It immediately became apparent that the restaurant was more popular as an indoor eating spot than as a drive-in. So Osborne determined to construct a new drive-in across the street and would be able to use the soda fountain there.

He was about to put the fountain in mothballs until it would be needed at the new location when he got another idea.

Don't put it in storage, he said, put it in the hardware and appliance store in the shopping center. The appliance store (Frigidaire) was already a going concern. But right next to it, Osborne was constructing a new department store.

He figured that with an archway between the hardware and department store and the soda fountain installed on the far wall of the hardware store directly opposite the archway, thirsty customers from the department store would be attracted through the hardware store. Exposure to the appliances and other equipment on display there could not help but stimulate more sales of these goods, he believed.

So six weeks after it was installed in the restaurant the soda fountain was moved. Even before the department store was opened, it was doing a brisk business from passers-by.

Lilie was very happy with this arrangement. He not only kept the soda fountain sold but he also sold a Sta-Cold beverage cooler and a water and ice station to partially replace the fountain in the restaurant.

Lilie declared that from the moment the restaurant opened, it was a success.

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Stainless Steel HOMEBAR
PLASTIC CHARTREUSE FRONT
BLACK TOP
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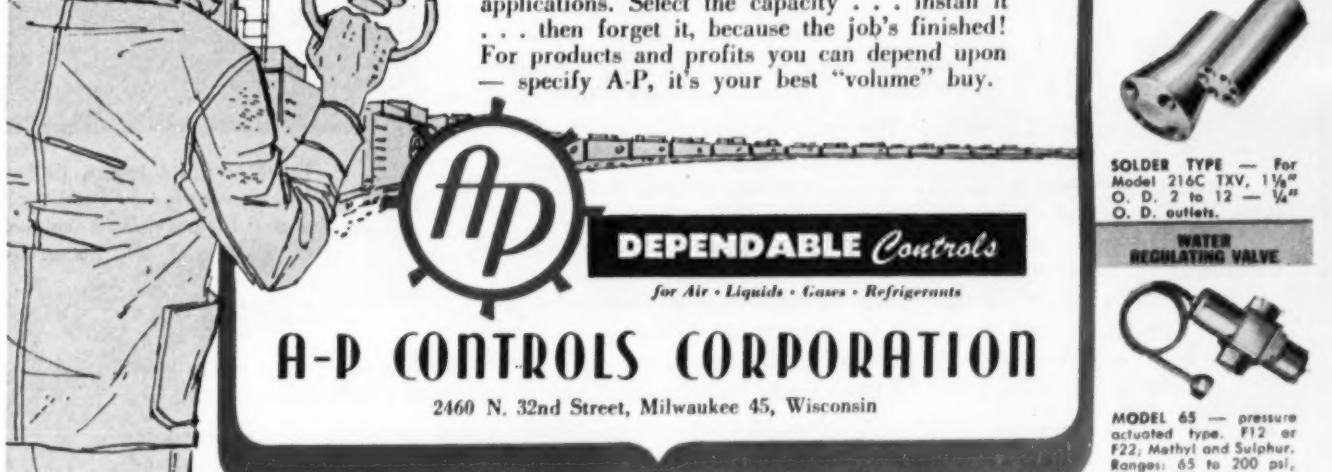
THERMOSTATIC EXPANSION VALVES



MODEL 205C — adjustable superheat. Capacity: 2 and 3 tons F12.
MODEL 206C — fixed superheat. F12, F22 or Methyl. Capacity: 0 to 1 tons F12.
MODEL 207C — adjustable superheat. F12, F22 or Methyl. Capacity: ½ and 1 ton F12.
MODEL 208 — fixed superheat and pressure limit. F12, F22 or Methyl. Capacity: ½ and 1 ton F12.
MODEL 209—adjustable pressure limit and superheat. F12, F22 or Methyl. Capacity: ½, 1 and 1½ tons F12.

AUTOMATIC EXPANSION VALVES

MODEL 204C — with graduated pressure scale. F12, F22; Methyl or Sulphur. Capacity: ½ ton F12.

MODEL 216C — external equalizer. F12, F22. Capacity: 3.6, 7, 11 tons F12.

MODEL 304—F12, F22; Methyl and Sulphur. Capacity: 1 ton F12.

You can rely on the A-P dependable line for trouble-free service

This quick guide shows just a few of the many standard A-P valves, filters and driers available from stock. Each is a proved specialist in bringing you *dependable profits in* standard or custom applications. Select the capacity . . . install it . . . then forget it, because the job's finished! For products and profits you can depend upon — specify A-P, it's your best "volume" buy.

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for Air • Liquids • Gases • Refrigerants

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DISTRIBUTORS

FLARE TYPE — ⅛" or ¼" flare-nut connectors. ½, 1 and 1½ ton capacity F12. Standard in 2, 3 and 4 — ¼" O. D. outlets.

SOLDER TYPE — For Model 216C TXV, 1⅛" O. D. 2 to 12 — ¼" O. D. outlets.

WATER REGULATING VALVE

MODEL 65 — pressure actuated type. F12 or F22; Methyl and Sulphur. Ranges: 65 to 200 psi, 165 to 300 psi.

SOLENOID VALVES

MODEL 67 — sweat or pipe body style. All-purpose. Soft, or metal-to-metal seat.
MODEL 73 — multi-purpose. Three orifice sizes, four body styles. Strainer screen.
MODEL 270 — refrigerant. Suitable for hot-gas defrost.

REGULATING VALVE

MODEL 235S — evaporator pressure regulator. F12, F22; Methyl and Sulphur. Two adjustment ranges.

CHECK VALVE

MODEL 234 — check valve. Inlet and outlet ½" SAE.

MODEL 66 — water. Pilot operated. 2800 bhp @ 45 psi. pressure drop.
MODEL 70NAX—refrigerant. Pilot operated, 9/16" orifice.
MODEL 70N — refrigerant. Large capacity. Pilot operated, 1" orifice.

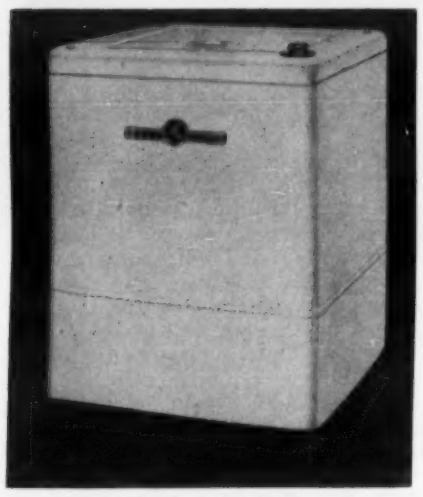
FILTERS AND DRIERS

MODEL 408 — trap-it. 3 sizes. Connections ¾" to ⅛" SAE.
MODEL 410 — trap-dri. 3 sizes. Connections ¼" to ½" SAE.

What's New

When requesting further information on new products, please use "Information Center" form.

Low-Priced Washers Added to Kelvinator Laundry Line



——KEY NO. C-1220——

DETROIT — Kelvinator has announced the addition of lower-priced automatic washer and wringer washer models to its home laundry line.

James B. Johnson, manager of laundry equipment sales, said the new models place Kelvinator in an improved competitive position.

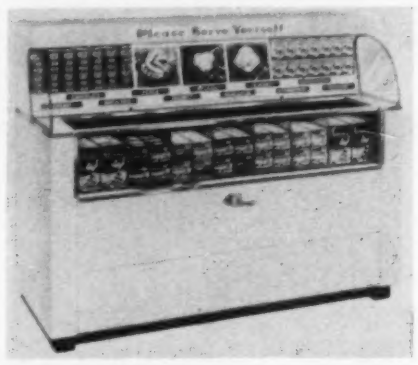
Full-size and with the same operating principles as Kelvinator's deluxe model, the new automatic washer has a suggested retail price of $249.95. Two models of the new low-priced wringer washer are offered, WB to retail at $129.95 and WPB at $139.95. The latter has a pump.

Like the deluxe automatic washer, the new lower-priced model AWS features "shampoo" washing, "x-centric" agitation, and overflow rinsing, Johnson said.

The new model will hold up to 9 lbs. of assorted dry clothes and is loaded from the top. The water is mixed automatically. Warm water is provided automatically by the timer operating solenoid valves in the hot and cold inlet lines.

Kelvinator's "x-centric" agitator is specially designed with rubber fins and numerous spray-holes, and has two separate and distinct washing actions. The whole agitator itself moves in an eccentric off-center circle in relation to the tub, 300 times a minute.

Two other unusual phases of the washing cycle itself complete the effective laundering job made possible in this type of action, Johnson said. These are the preliminary "shampoo" washing that takes place at the start of the washing cycle, with a full measure of either soap or detergent in only half a tub of water, eliminating need of considerable pre-treating of clothes, and the overflow rinsing at the end of the washing cycle.



New Convertible Display Superstructure Offered

——KEY NO. C-1221——

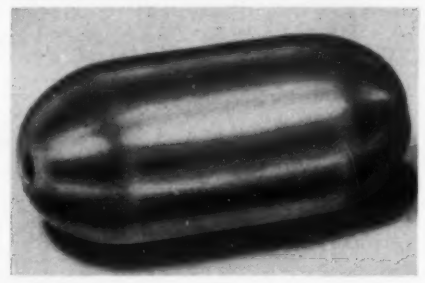
UTICA, N. Y. — Anticipating the future trend of merchants to cash in on the profit of related ice cream items, the Refrigeration Div. of Savage Arms Corp. is introducing convertible display superstructures with self-help, glass-front models GF-13 and GF-10.

The superstructure comes with full-color pictures which leave room for a generous display of related items, but for the merchant who wants to obtain maximum display space, the pictures in the Savage models may be removed and the space becomes a display area for additional toppings, syrups, nuts, cones, etc.

The removable panel may be used for promoting the sale of weekend specials or tie-ins.

Flat space on top of the superstructure provides additional space for point-of-sale promotion.

Clear glass fronts, plastic flavor strips, and fluorescent lighting are also features.



Remco Enters Accumulator, Accumulator-Drier Field

——KEY NO. C-1222——

ZELIENOPLE, Pa. — Remco, Inc. here has entered the accumulator and accumulator-drier field with standard lines for original equipment manufacturers.

Both accumulators and accumulator-driers are made with spun-end copper shells, inverted openings for silver brazing being provided. The joints can be brazed with silver solder, silfos, or fos copper with no additional cleaning needed before the manufacturer's brazing operation.

"Remco's accumulator-driers incorporate the high efficiency molded Remcal drying element, nested in glass fiber to provide cushioning against shock," the company said. "A perforated retainer insures no shifting of the drying element in handling.

Net volumes of Remco accumulator-driers range from 5⅛ through 36¾ cu. in., with moisture removal capacities at 80° F. or lower varying from 53 to 252 drops of water.

Accumulators are made in a range of 12 sizes varying in volume from 6 through 40⅞ cu. in.

Installing pre-formed grids of copper tubing for radiant heating.

Pre-formed Tubing for Radiant Heat Is Packaged

——KEY NO. C-1224——

WATERBURY, Conn. — Manufacture of pre-formed packaged grids of copper tube for radiant panel ceiling heating installations is announced by The American Brass Co.

American Brass' new product, PG's, are made of ⅜-in. type L copper water tube. Each panel grid contains approximately 50 linear feet. At normal 6 in. spacing along the centerline, the PG is rated at 1,800 B.t.u., and at this spacing measures about 56 in. wide by 60 in. long—serving a ceiling area of 30 sq. ft. One end of the unit is expanded so that the grids are readily solder-connected in series without the necessity of fittings.

The panel grid is so designed that by merely contracting or extending a PG by hand, it can be installed in a way that the tube spacing will meet all design requirements. Over windows, doors, and along outside walls where heat loss is greatest, the grid is easily contracted, if desired, to 4½ in. tube spacing. Conversely, as the grids are installed towards the center of the room, and less heat output per square foot of ceiling is required, the PG can be expanded up to a tube spacing of 12 in. This flexibility in tube spacing means that a single PG can serve ceiling areas ranging from 22½ sq. ft. to 60 sq. ft.

PG's are equally suitable for rock lath or metal lath construction. They weigh approximately 10 lbs. each and are packed four to a (12 in. x 7 in. x 60 in.) carton for easy handling.

Soldering of Aluminum Possible with New Flux

——KEY NO. C-1223——

FORT WAYNE, Ind.—"Applicable for the soldering of most commercial metals and particularly adapted for the soldering of aluminum" is the major claim for the new "SX Aluma-Flux" developed and manufactured by Essex Wire Corp. and distributed by Insulation and Wires, Inc.

Ability of this new flux to solder aluminum is "based upon the unique operation of the flux whereby the flux initially reduces surface oxides and then deposits a thin layer of plating material on the solder area," the company states. It is non-corrosive.

The plating material avoids oxidation and serves as an improved base for soldering, it is explained.

Now available as a fine, white powder, the flux may be offered in the future as a paste. The flux is non-hygroscopic and can be "exposed indefinitely to normal atmospheric conditions without any material moisture pickup," the company states.

The flux can be used as a powder or in the molten state, which is obtained at a temperature range of 450° to 500° F.

Soldering temperature with the flux is in the range of 750° to 800° F.

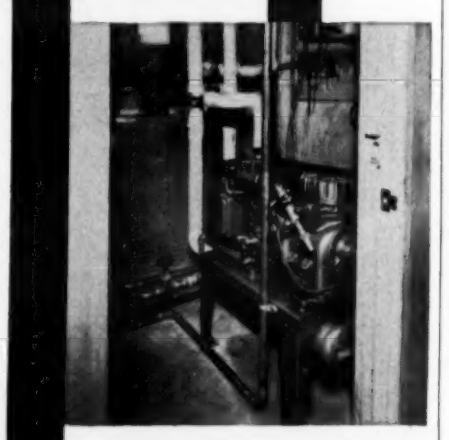
It can be used "with substantially all types of solder," it is claimed.

The new home of Herman Blum which received a second honorable mention from the Dallas Chapter of American Architects.

Prize-Winning Home

healthfully air conditioned

by Acme FLOW-COLD®



The Flow-Cold Liquid Chiller fits conveniently in a hall closet to provide a central cooling plant for the whole house.

A central air conditioning plant that fits snugly into a hall closet is just one of the many outstanding design features of this functional modern home located in Dallas, Texas. Selected for its compact size, quiet and efficient operation was the Acme Flow-Cold Packaged Liquid Chiller. Design conditions called for the unit to cool 15 GPM of water from 53 degrees to 45 degrees, thus handling a load of 5 tons. By keeping this 3-bedroom ranch type home comfortable in the hottest Texas weather, the Acme Flow-Cold has proved the wise choice of consulting engineer, Mr. Herman Blum, and the efficient installation of the Beard Plumbing Co.

The Flow-Cold Packaged Chiller was installed in conjunction with a hot water boiler and circulates chilled water in the summer and hot water in winter, with convectors in each room for year-round air conditioning. Versatile, easily installed and pre-tested at the factory, the Acme Flow-Cold can be used effectively by you in your next job — whether you are designing or building homes.

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Mfgs. of a complete line of Air Conditioning and Refrigeration Equipment

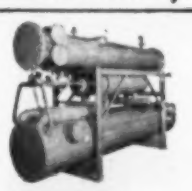
Evaporative Condensers
Cooling Towers
Floor-type Unit Coolers

Direct Expansion (Dry-Ex) and Flooded Liquid Chillers

Heat Exchangers, Oil Separators

Shell and Tube, Shell and Coil Condensers

Receivers, Pipe Coils



Packaged Liquid Chillers to 225 tons

Flow-Temp Heat Pumps

Flow-Cold Liquid Chillers

Remote Room Conditioner

Continuously serving the refrigeration and air conditioning industry since 1919

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New Bedford, Massachusetts

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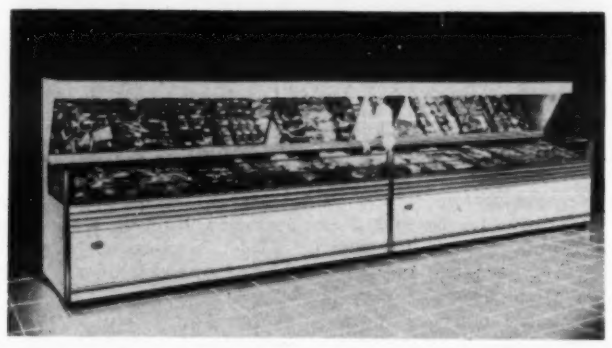


Sherer Improves Self-Service Packaged Meat Case

——KEY NO. C-1225——

MARSHALL, Mich.—Sherer-Gillett Co. has announced to its distributors and dealers an improved model 2700 self-serve case of the continuous type for the display of packaged fresh meats, produce, dairy products, etc.

Features of the new cases include extruded aluminum front panel and matching tag molding plus a refrigeration system "stressing atomized air, directional flow, and recirculated air."

The models continue to have the convertible-reversible feature on the storage compartment which permits the use of sliding doors in the front or rear, as well as both front and rear so that a pass-through arrangement can be used.

The case is also available as a single duty job with solid panels both front and rear.

Superstructures are also available in two over-all case heights of 59 in. and 66 in. The 66-in. superstructure has sliding mirrored doors so that it may be serviced from the rear.

Plastic Paint for Steel Surfaces Repels Heat

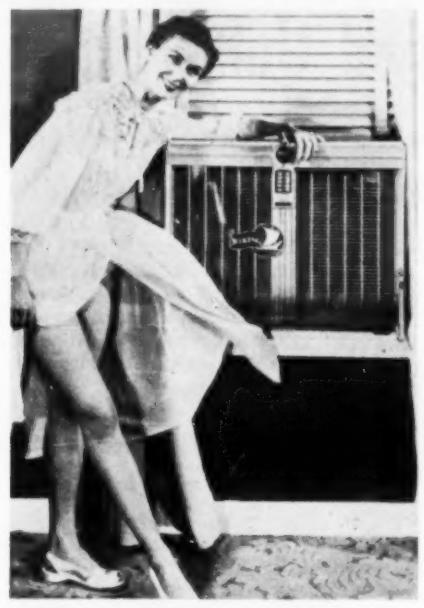
——KEY NO. C-1226——

TULSA, Okla.—A new paint that is claimed to cut the temperature of the average metal roof by 32° F. and the average asphalt roof by 30° F. has been announced by Coating Laboratories, Inc. here.

Called "Koolcote," the paint is a bright white that is claimed to do a better heat and light reflecting job than others because of a combination of vinyl plastic and four pigments developed after three years research.

The company says that a tank standing in 100½° F. temperature and painted with Koolcote had an interior temperature of 99½° F., while an unpainted tank is the same heat had an interior temperature of 143° F.

Recommended for galvanized as well as other steel buildings, the paint would cost about 6 cents per sq. ft. to apply. At present, a Coating Laboratories crew does the work, putting on the plastic coating first and then the paint.



Viking Window Fan Has 5 Pushbuttons

——KEY NO. C-1227——

CLEVELAND — Five pushbuttons for a choice of high or low speed on either exhaust or intake are a feature of the new 1954 window fan introduced by the Viking Air Conditioning Div. of National Radiator Co.

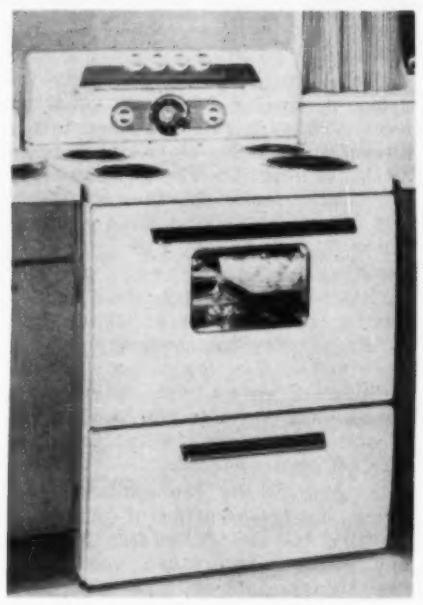
The electrically reversible fan, called the No. 955, also features a new four-blade propeller design and a ⅙-hp. motor that pulls 3,500 c.f.m.

Yet, the company says, the 22-in. fan turns only 712 r.p.m. on belt drive for quiet operation. On the reverse cycle, it draws in more than reverse cycle, it draws 2,000 c.f.m.

The fan cabinet has a baked enamel finish in seafoam blue and safety grill openings. Aluminum jet legs are provided.

The fan is adjustable to any double hung sash from 24 to 42 in. wide.

Westinghouse Range



——KEY NO. C-1228——

DELUXE cooking conveniences in 30 in. of floor space are offered with the 1954 Westinghouse Imperial 30 range, model FG, shown above. It has a 24-in. oven. The oven has the Fiberglas heat guard seal that provides any rack baking or roasting and a glass look-in door to permit the homemaker to check the oven without opening the door. A deluxe model, the Imperial 30 is equipped with the Super Corox unit that gets red hot in 30 seconds, an automatic oven timer. Suggested retail price is $259.95.

Morrison Announces Summer Air Conditioners

——KEY NO. C-1229——

BUFFALO—New 1954 models of "Mor-Sun" summer air conditioners, designed to complement the complete line of "Mor-Sun" automatic forced warm air furnaces in size, appearance, and performance, have been announced by Morrison Steel Products, Inc. here.

Designed for double duty — residential central cooling or commercial floor installations—models are available in 2-ton and 3-ton refrigeration capacities.

"Mor-Sun air conditioners provide a wide variety of heating-cooling combinations for residential work since they can be installed as mated units with all Mor-Sun warm air furnaces or as individual cooling units, duct-connected to any make of warm air furnace," the company said.

Described as "extremely compact," both the 2-ton and 3-ton models take up 24⅜ in. by 22 in. of floor space. Each is 60¾ in. high.

Featuring a hermetically-sealed unit using "Freon" as the refrigerant, the air conditioners control temperature, humidity, ventilation, air circulation and cleanliness. City or well water may be used to cool the refrigerant—with or without a cooling tower.

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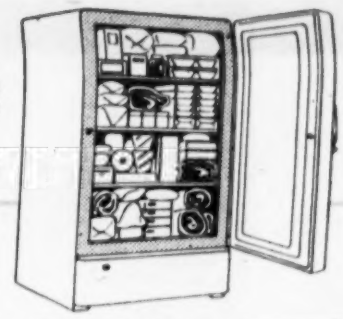
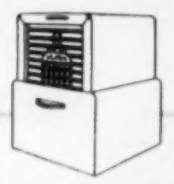


(Above) New 19 cu. ft. Victor Upright holds 650 lbs. of Food! (Available with Inner Shelf Doors at slight additional cost.)

Victor chest type Quickfreezer . . . 8, 10, 14, 19, 21.5 & 25 cu. ft. sizes!

Victor Room Air Conditioner . . . exclusive three dimensional cooling with "push button" control.



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Let Mfr. Help Install Packaged Units

Success Depends on Proper Application, So Take Advantage of Manufacturers' Instructions, Data, Plus Your Know-How To Do a Good Job the First Time

CLEVELAND—"It all boils down to this—use all the data the manufacturer supplies you when installing and servicing self-contained store conditioners; it's available, so use it," urges C. S. Kessler, service manager of U. S. Air Conditioning Corp.

Speaking at the 16th annual convention of the Refrigeration Service Engineers Society here, Kessler outlined various factors involved in selecting, installing, and servicing the large package units.

"Operation of upright store conditioners is greatly dependent on their proper application," he declared, emphasizing that "one of the most important factors is sizing the unit for the job it's to do.

What Determines Load?

"Usually their selection is based on maintaining a 15° difference between inside and outside temperatures. What determines the load?—such things as type of building construction, kind of wall, number of windows, direction the building faces, etc., in addition to the internal load which depends on the number of people present, lighting, type of work, etc."

Other factors to be considered, he said, include the type of power available (single or three phase); sufficient quantity of power, and water supply and city codes governing its use and disposal (a serious problem in some cities.)

"This brings up the possibility of using a cooling tower to conserve water. These have to be sized to the known wet and dry bulb temperatures of the vicinity. Usually you figure on 75° water entering the condenser and 95° water leaving. This assumes water flow at the rate of 1 gal. per minute per ton.

"Because you don't want water leaving the condenser at higher than 95° F., it may be necessary to use more water. You can employ a rule-of-thumb formula for determining the amount of water you have to use to maintain a given water temperature off the condenser."

Dividing 30 by the difference between the temperature of the water entering the condenser and the leaving water temperature you would like to maintain will give approximately the gals./min./ton required through the condenser.

Going on to the matter of installation, he commented, "the first problem is where to locate the conditioner. Generally, it is used in the conditioned space without ductwork. Often the unit can't be installed there, so you have to use ductwork. This should be kept to a minimum and the airflow should be kept at 1,200 c.f.m.

"Install the unit as close as possible to the source of water and power to minimize length of water lines and wiring. You need a good solid floor to avoid noise transmission and vibration," he also advised.

"Allow ample space around the unit for easy service and maintenance. This can save time and money in the fuuture.

Keep Ductwork to Minimum

"Most store units can be employed with fresh air supply, but the ductwork should be kept to a minimum. If the unit has no provision for bringing the fresh air through the filter section, then filters should be provided for the fresh air."

Because in many cities "power companies can't meet the demand for these installations you should discuss the problem with the utility to make sure you have adequate power supply," Kessler urged.

"Use proper wire sizes and switches and fuses. Manufacturers will give you this data. Use a fuse disconnect switch ahead of the unit and as close to the unit as possible.

"After the unit has been set in place don't throw away the booklet or instruction sheet that normally comes with the unit. Your No. 1 job is to read these instructions carefully instead of throwing them away.

"Don't turn on the electrical circuit until you've gone over the refrigerant circuit carefully and opened the valves that have to be open.

"Check all parts of the machine and cabinet for damage in shipment. Tighten all loose bolts. Check belt alignment and tension.

"Check lubrication of fan bearings. If they are ball bearings then you don't have to lubricate them generally for six months to a year. Sleeve bearings, however, need lubrication before they're operated. The same rule applies to motor bearings.

"The blower shaft itself should be lubricated, that is, covered with oil, to prevent the formation of rust, which can occur as a result of condensation.

Intermittent Starting Will Pull Oil In

"The compressor," Kessler continued, "is pre-lubricated at the factory and shouldn't require any oil. This can't be checked before the unit is started. These units are pumped down at the factory, and this may leave some oil out in the system. Adding oil to the compressor before the unit is started may very well cause an overcharge of oil under these circumstances. We recommend intermittent starting of the unit just in case oil is out in other parts of the system."

Such other matters as removing shipping bolts and blocks and opening all valves on the refrigeration and water systems were cited by Kessler, too.

"All electrical connections should be checked, both internal and external. Connections in the unit itself may have become loose after tests were made at the factory."

After the unit has been started, Kessler said, the expansion valve should be check to make sure it isn't open too wide.

"Check refrigerant pressures and also the airflow across the coil, using a good velometer. If you have ductwork, nine times out of 10 you will have to step up air delivery."

In discussing trouble-shooting, Kessler passed over "the general run of refrigeration system servicing which you're all familiar with," and went on to comment:

"Reduced machine capacity can be caused by reduced airflow. This can be the result of belt slippage or perhaps too much static pressure in the ductwork. Turning vanes in ducts will hold static pressure to a minimum. It's also important to check whether the filters and/or coil are dirty or whether there are other restrictions in the air system."

Kessler reviewed wiring diagrams, pointing out that such service complaints as chattering of the magnetic starter is "probably due to improper operation of the thermostat—it's making poor contact."

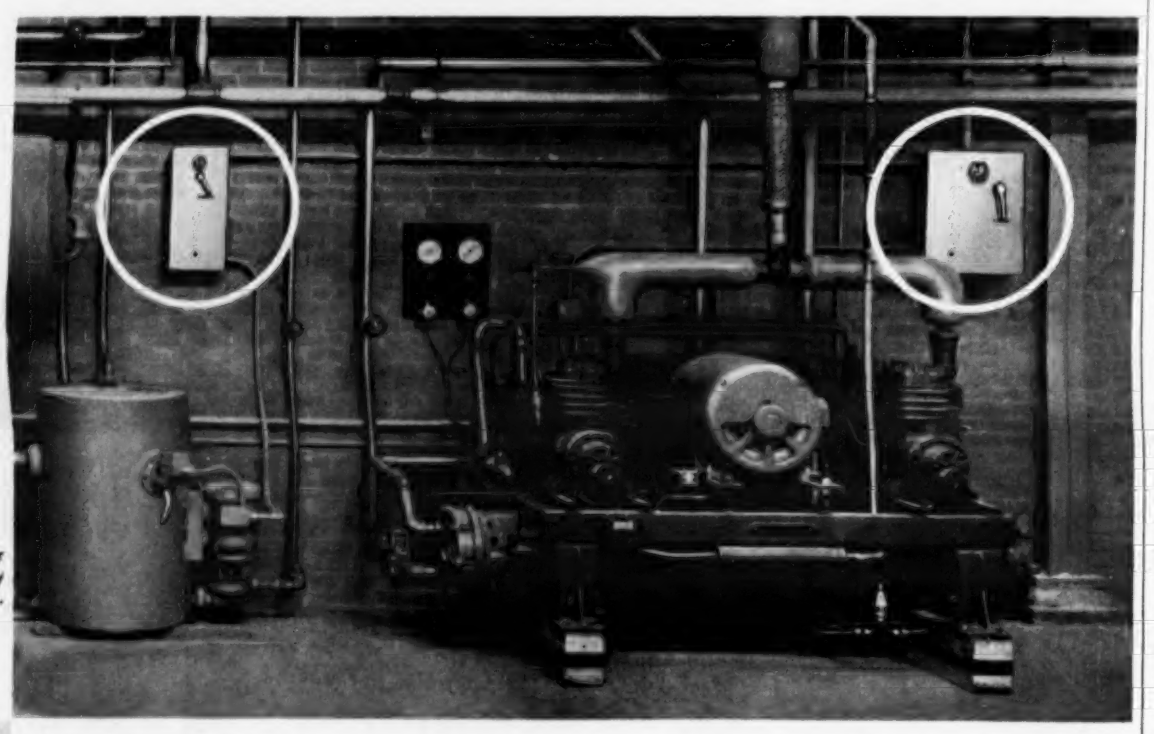
He also said, "if you have a compressor burnout on hermetic or semi-hermetic systems, be sure to clean out the system thoroughly before installing a replacement compressor. The sludge left from the first burnout may damage the new replacement unit."

Post-Season Maintenance—Keep Selling It

Post-season maintenance work, he continuued, should include pump-down, cleaning of the entire unit and filter bank, and a check of lubrication.

"There is not enough of this type of service at the present time. Contractors should make an earnest effort to sell it. Lack of such service will cause difficulties next season."

In conclusion, Kessler advised the servicemen: "When you refer a problem to a manufacturer, give him all the pertinent data—model and serial number and all the facts of the troubles. Then he can help you get the unit back in operation much sooner."



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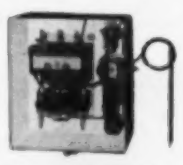

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This great addition to the "Serviceman" line does a vital job supremely well. Its white hairline pointer shows total time of test; red pointer shows total running time. It is easier to read, use, and interpret than a recorder . . . has no charts or leaky pens to bother with . . . yet it is very moderately priced.

Two models (opposite) cover all conditions. Note sturdy case finished in attractive hammerloy gray with sharp white numerals on black dial . . . also suction-cup feet for firm placement without damage to finish. This is the instrument you've been waiting for. Write for details, or

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115 VOLT, 60 CYCLE MODEL

For testing smaller units with compressors of ¾ hp. or less. Operates in series . . . Simply plug equipment into timer; timer into wall outlet.

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For testing larger installations regardless of horsepower. Operates in parallel. Note well shielded alligator clips for attaching to motor terminals and power lines.

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SLANTS on Service

"Slants on Service" is a handy "package" devised by the NEWS for its busy readers.

If Drier Clogs Quickly It's Just Doing Its Job

The "defective" drier-filter which clogs up in a hurry after being installed on a system should not be condemned, because it's doing exactly what it was supposed to—remove moisture and corrosion.

Writing in a recent issue of *Ansul News Notes,* Louis A. Wallace, the company's senior refrigeration engineer, recalls:

"Several years ago we ran into a service problem with a large unit which had been requiring regular annual overhauls. Every year, right on schedule and at the cost of several hundred dollars, this unit had been torn out, carted off to the shop, and thoroughly cleaned and blown out.

"We suggested that the owner try using filter driers to clean out the system. He did . . . and the first drier lasted about 20 minutes before it clogged. Another drier was installed and this one last an hour and a half. Subsequent driers were put on until after the eighth one the system ran like clockwork and at the last report was still running after three years without a service call.

"In this particular extreme case it took the combined efforts of eight driers to clear the system of accumulated moisture and corrosion. However," Wallace points out, "driers are basically expendable items and even eight of them are still much cheaper than a complete overhaul. Once the moisture is eliminated, corrosion and plugging will no longer be a problem."

* * *

Checking Actual Horsepower

To determine whether a compressor motor is actually delivering its rated horsepower, use a wattmeter or a watt-voltmeter and compare reading with wattage given by manufacturer for given head and suction pressures as indicated on gauges.

If data from manufacturer isn't available, you can assume 1,000 watts per horsepower for this check.

Improper Application, Installation, or Service Is Basis of Most Field Trouble

CLEVELAND—"Ninety percent of our field trouble is not mechanical," E. C. Hamilton, manager of the distributor service department of the air conditioning division of Worthington Corp., told members of the Refrigeration Service Engineers Society at the latter's 16th annual convention here recently.

"It is improper application, improper installation, or improper service," he declared. "If properly maintained, the equipment produced today will run for years without trouble."

Hamilton pointed out to the servicemen that the large refrigeration and air conditioning installations offered a fruitful field for their talents.

"Air conditioning equipment from 15 to 250 tons will never be serviced by a truck driver," he asserted. "It must be serviced by trained men."

The big difference in the last few years is not in what we are doing but in the applications of air conditioning. We are now putting comfort cooling in plants, and using cooling in processing industries, Hamilton said.

"You people come in," he noted, "by learning how to put that equipment back into operation quickly."

He explained that there is no mystery attached to servicing large jobs.

"It makes no difference whether it is a meat case or a 150-ton air conditioning system. You still have the same basic refrigeration cycle. But you have larger component parts, more complicated throw-in devices, multiple low sides, and capacity variations within one piece of equipment."

Explaining some of the problems of trouble shooting large equipment, Hamilton emphasized the mechanical failures can be repaired but unless the source is found and corrected, trouble will recur.

Too many times, he said, a serviceman answering a call will go in and repair the trouble but will not take the time to find out what caused the trouble in the first place. Some times, he said, the cause of the trouble is in some other part of the system entirely.

He cited an instance where a plant was reporting fluctuating temperatures. The serviceman came in to check the equipment, but could find nothing wrong. But the complaint continued. Finally he called the factory and Hamilton went out to check the job.

He could find nothing wrong with the equipment either. But as he was watching the employe routine, he noticed that the girl who logged the temperatures on one shift was extremely short and had to look up at the gauges. The girl who read them on the next shift was tall and looked down upon them. The difference in angle at which the temperatures were read was the only cause of the variations.

Pointing out sources of trouble to watch for, Hamilton emphasized four: liquid slugging, liquid in the oil, moisture in the system, and the cooling tower.

Liquid slugging, he said, is caused most frequently by oil trapped in the suction line and carried over by velocity to the compressor or by liquid trapped in the low side during the off cycle. The latter occurs most often when the compressor is located in the basement and the low side is situated in some other part of the building.

Other causes are condensation of the refrigerant in the coil caused by cool air passing over the coil in the early morning, having one compressor and multiple coils with all the solenoid opening at once (solution is to set the solenoids so they will open in sequence), and improper location of the expansion valve.

When liquid refrigerant gets into the oil and the mixture gets into the crankcase, the refrigerant will evaporate and cause insufficient lubrication. A cure for this is to use a crankcase heater during the off-cycle.

Another cause of liquid in the oil is back draining from a long discharge line. In this case, use a check valve or solenoid in the oil return line, Hamilton said.

For refrigerant condensing in the compressor due to the temperature difference between the low side and the compressor, use a heater or pump down with thermostat restart.

Moisture in the system will cause copper plating, oil slugging, or expansion valve trouble, he declared.

Another source of trouble is the cooling tower, Hamilton said. He warned that towers should be checked for clean water every 60 or 90 days and the coils in the condenser should be cleaned regularly.

Cheyney Elected V.P. of Sales for Buffalo Forge

BUFFALO — Charles C. Cheyney has been elected vice president of sales of the Buffalo Forge Co. He started with the company upon his graduation from Cornell in 1911.

After five years in the engineering department, he was transferred to Chicago as manager of the sales engineering firm, Cheyney & Emmert, who represented the company. He returned to Buffalo in 1928 and was made assistant sales manager. He became sales manager in 1945 and in 1949 was elected a director of the company.

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Efficient operation makes a product easier to sell on one hand; builds solid customer satisfaction on the other. Precision engineering, only the best materials, skilled craftsmanship, and over 25 years experience in commercial and industrial refrigeration add up to higher efficiency for every Larkin product. And this means lower operating costs — important to buyer and seller alike.

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Turn to "What's New" Page for useful information on new products. Use Key No. for fastest service.

it's a drier! it's a strainer!

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The sensational new versatile

MUELLER BRASS CO.

CARTRIDGE DRIER

in capacities from 1 h.p. to 40 h.p.

4-cartridge, 4" diameter shell, 40 h.p. capacity model

117-AR

The new Mueller Brass Co. Angle Type Cartridge Drier is designed to meet every operating requirement. Versatility is the outstanding feature of this unit. To secure this versatility, special strainer cartridges were developed to the same dimensions as the standard drier cartridges. These drier and strainer cartridges are completely interchangeable size-for-size. In a system requiring extra strainer capacity, a strainer unit may be placed in the shell ahead of one or more drier cartridges. For added protection and still more filtering area, the new unit has a special "safety screen" at the outlet end.

Look at all these outstanding features:

- spun inlet end provides strong, leakproof construction . . . faster heating for soldering.
- flanged end is positively sealed by neoprene asbestos gasket, with minimum bolt torque.
- cartridges are non-directional . . . filter screen and dispersion plate at each end insures even distribution of high velocity refrigerant for maximum desiccant contact.
- the new silica gel PA 400 desiccant provides up to 98% more drying capacity.

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Completely new—the most powerful, finest performing, best-looking Advance-Design trucks ever built!

Here's America's greatest truck builder's latest and greatest truck! Here's the brand-new line of Chevrolet Advance-Design trucks for 1954!

You'll find they're packed with great new features . . . loaded with big new advantages that mean faster, more efficient service and lower operating costs on *your* job.

NEW POWER AND ECONOMY

You get new high-compression power and greater operating economy with *three* advanced valve-in-head engines. Bigger, brawnier "Thriftmaster 235" engine. Rugged, durable "Loadmaster 235" engine. Mighty, all-new "Jobmaster 261" engine*—most powerful in Chevrolet truck history.

NEW RUGGEDNESS AND RELIABILITY

Heavier axle shafts on 2-ton models. Bigger, more durable clutches on light- and heavy-duty models. Stronger, more rigid frames on *all* models. New pickup and stake bodies are built to stand the roughest going and to keep coming back for more—and they give you greater load space for '54!

NEW COMFORT AND CONVENIENCE

New Comfortmaster cab provides increased visibility with new one-piece curved windshield. New Ride Control Seat* brings you extra driver comfort. New truck Hydra-Matic transmission* offers the last word in no-shift driving ease. Available not only on ½- and ¾-ton Chevrolet trucks, but on 1-ton models, too!

Plan to see the completely new '54 Chevrolet trucks, and get the whole money-saving story at your Chevrolet dealer's now. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

*Optional at extra cost. Ride Control Seat is standard on C.O.E. models, available on all other cab models as extra equipment. Rear corner windows in standard cab, optional at extra cost.

Most trustworthy trucks on any job!

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ADVANCE-DESIGN TRUCKS

MORE CHEVROLET TRUCKS IN USE THAN ANY OTHER MAKE

STANDARDIZATION=EFFICIENCY, ECONOMY

How Quartermaster Corps Has Applied Interchangeable Refrigeration Parts and Equipment; DSMA Study Shows Value to Industry, Military

By J. W. Millard, Research Director, Mechanical Products Branch, Research & Development Div., Office of the Quartermaster General*

I was in the Navy in the last war and put in a great deal of time in the Far Pacific. My last command was a destroyer tender, and I remember vividly to this day the difficulties we had in my ship in keeping operable the refrigeration equipment of American destroyers, destroyer escorts, and smaller landing craft; Canadian corvettes; and Australian and New Zealand frigates and corvettes.

It was a tough job keeping the refrigeration equipment from dozens of manufacturers operating, with spare parts which were not interchangeable, and in some cases which we didn't have anyway. On Okinawa and at Leyte, I saw Army and Navy refrigerated boxes and refrigeration equipment, none of which was interchangeable one with the other.

At that time, it appeared to me as a very great waste of money, and I wondered why someone didn't do something about it. Other officers and civilians in the Army and our sister services have had the same experiences; as a result we are thoroughly sold on the value of standardization!

The Quartermaster Corps started on its own refrigeration standardization in 1947 by consolidating requirements and redesigning to make possible multiple use of components, thus reducing the number of compressor sizes and components to the minimum. We are now, I believe, at that point in so far as number of sizes is concerned.

*Presented before the RSES Service Managers Club on Nov. 11, 1953, in Cleveland.

What Has Been Done

You can well ask what else we have done. Here are some examples:

We have developed after some years, some expense, and a great deal of sweat, blood, and tears, what is considered by many to be an outstanding specification of standardized panels for field refrigerated warehouses, from a minimum of 600 cu. ft. on up indefinitely, in increments of 600 cu. ft. These panels, incidentally, are now being standardized for the Armed Services.

We have a second length of ceiling and floor panels, which marry with side panels and which we can use in post camp and station boxes from 400 to 1,600-cu. ft. capacity, in increments of 200 cu. ft. Where before we had two thickness of panels for the two temperature ranges, 0° and 35°, we now have one 6-in. thick panel used for both; and where before a Navy panel would not mate with an Army panel, now they are completely interchangeable. Further, the construction is such that these panels may be made by many people in the event of an emergency.

We have standardized on one refrigerant, "F-12," for all of the Department of Defense, and our equipment design is based upon the use of this refrigerant.

We have standardized on the opening in the field refrigerated boxes so that a refrigerating unit of the Navy may be replaced interchangeably with one of the Army even though their component design, at this time, may not be exactly the same.

We are developing and now have under test a panel fastener which has real promise and which will, in all probability, be a standard item for the Department of Defense.

We are working with the Marine Corps to adapt the condensing equipment on their 100-cu. ft. box to fit it to the Army's 150-cu. ft. box so that, again, we can use a common set of equipment. These are just a few examples of what we have accomplished, all tending to complete standardization in the Department of Defense.

Up to now, I have been talking primarily about the Quartermaster Corps. At this point, I think it would be well to pay a deserved word of tribute to our fellow workers in the other services: In the Corps of Engineers, the Bureau of Ships, the Bureau of Yards and Docks, the Marine Corps, and the Air Force. In general, our relations with our sister services have been excellent. We have gotten the highest and best sort of friendly cooperation. The money which the Department of Defense is saving now, and which will be saved in the future, would not have been possible without the whole hearted and unselfish cooperation and understanding of the engineers in the using services.

As I said, the Quartermaster Corps started work on the standardization of refrigeration equipment in early 1947. I would be less than fair if I told you that the results obtained were so small as to be almost nonexistent (except for the Quartermaster Corps) because we were talking only for one service, and industry simply was not interested on that basis.

DSMA Begins Study In '51

But, in September of 1951, the Defense Supply Management Agency of the Munitions Board designated the Quartermaster Corps as the activity responsible for obtaining factual information in connection with the Munitions Board standardization program for refrigeration equipment up to 10 hp.

This, as you can understand, was for the whole Department of Defense and put matters on an entirely different basis. On Sept. 5, 1952, a contract was awarded by the Quartermaster Corps to Consultants, Inc., to procure and analyze data on refrigeration equipment and components, and submit recommendations for standardization to the Quartermaster Corps. In March, 1953 the DSMA increased the responsibilities of the Quartermaster Corps for the Department of Defense by including air conditioning equipment up to 10 hp. Air conditioning is a responsibility, as far as the Army is concerned, of the Corps of Engineers, but it was included as an extension to our contract with Consultants, Inc., because many of the components are common to both usages.

You have seen in the papers perhaps, of the recent reorganization of the Defense Establishment, as a result of which, among others, the Munitions Board, as such, was done away with, and in its place an Assistant Secretary of Defense for Supply and Logistics was installed. The old DSMA became, in effect, part of the staff of this Assistant Secretary of Defense, and the Office of Standardization became one element of this staff. Perhaps at this point it would be well for me to explain to you the relationships that exist in our Department of Defense Standardization effort.

Consultants, Inc., has been serving as a contractor under our guidance to analyze data and submit recommendations for refrigeration standardization to the Quartermaster Corps. We in turn approve the recommendations and submit them to a Military Task Group made up of representatives of all the services for their approval. This Military Task Group reports through the Office of Standardization to the Supply and Logistics Staff—which means the Assistant Secretary of Defense. An Industry Advisory Committee advises the Assistant Secretary of Defense through the Office of Standardization as a parallel organization to the Military Task Group.

Industry, Military Cooperate

Thus, any recommendation of the Quartermaster Corps in carrying out our mission must have the blessing of both industry and the military before it is approved by the Assistant Secretary of Defense.

Now as to the work done by Consultants, Inc., and our progress in the field of refrigeration standardization. The first action of DSMA was to form an Industry Advisory Committee. In a letter to industry the DSMA said that:

"a. Membership will be selected in terms of business enterprises or companies representative of the manufacturers of refrigeration and air conditioning units and major components of these units and will provide for representation according to size of firm and geographical location.

"b. The committee's function will be to advise the Defense Supply Management Agency in the development of plans for:

"1. Reducing the number of models of refrigeration and air conditioning units used by the three military departments.

"2. Obtaining the maximum practical interchangeability of parts. The object is to simplify spare parts supply and maintenance in the interest of military economy and increased combat efficiency."

The committee was formed with 11 members. It met and formed four subcommittees: Open type compressors, hermetic compressors, heat exchange equipment, and auxiliary equipment.

4 Subcommittees Formed

The committee also recommended that work be confined at first to the open type compressor, as it was felt that the difficulties in this field were greater than they would be in the hermetic field. They felt further that a pattern would be established which could be followed in later standardization efforts. Accordingly, a data form was prepared by Consultants, Inc., and, after approval by the committee, was then distributed to 15 manufacturers of open type compressors.

While these data were being collected from industry, Consultants, Inc. was working in several different fields. In the first place, they made a complete survey of the entire refrigeration industry which included not only compressors but all equipment associated with refrigeration and air conditioning equipment. They also started a catalog compilation of data on open type and hermetic compressors, heat exchange equipment, valves, controls, and standardized acceptance and performance testing; in fact, all of the components upon which we would later take committee action.

Open, Hermetic Compressor Data Analyzed

An analysis of the catalog data on open and hermetic compressors was undertaken by V. S. Patterson & Associates, Inc., as subcontractors. You may be interested in some of the general comments which were submitted by this organization at the completion of this study.

"The summated findings are completed enough to disclose the lack of consistency in design, dimension, and application engineering throughout the industry. Actually, these differences can be explained to some extent by the fact that some manufacturers have grown up into commercial size machines from the household refrigerator base and others have come down into the commercial field from the industrial field.

"Another factor is that few complete lines of refrigerating machines were developed to be a complete group from the smallest to the largest, and therefore, lack design consistency for a given manufacturer's group. The trend today among many manufacturers is to design hermetics, which requires a somewhat different approach from the standpoint of internal design and production methods.

Replacement Problems

"The industry should be interested in facing this problem and cooperatively working on plans for solving the various problems. Industry is already facing this problem of replacement where it is sometimes desirable to replace a compressor of obsolete design with one of current production."

The multiple approach of our contractor was very important in indicating areas and directions for later work, but one of the most important things accomplished in the contract was a compilation and analysis of data from the many refrigeration and air conditioning specifications used by the Armed Services. This was a tremendous job and it was the first time that the complete Department of Defense picture of refrigeration and air conditioning had been made plain.

In accordance with this study, which was also the recommendation of the Military Task Group, all of the military open type compressors were to be considered at two condensing temperatures: 135° F. for air cooled and 105° F. for water cooled condensers.

In addition, the Military Task Group approved as standard, -20°, -10°, 20°, and 40° F. suction temperatures. On this basis, there were found to be 33 field requirements for open type compressors. These were plotted with B.t.u. against standard suction temperatures and a study made on this basis.

Data sheets were finally received

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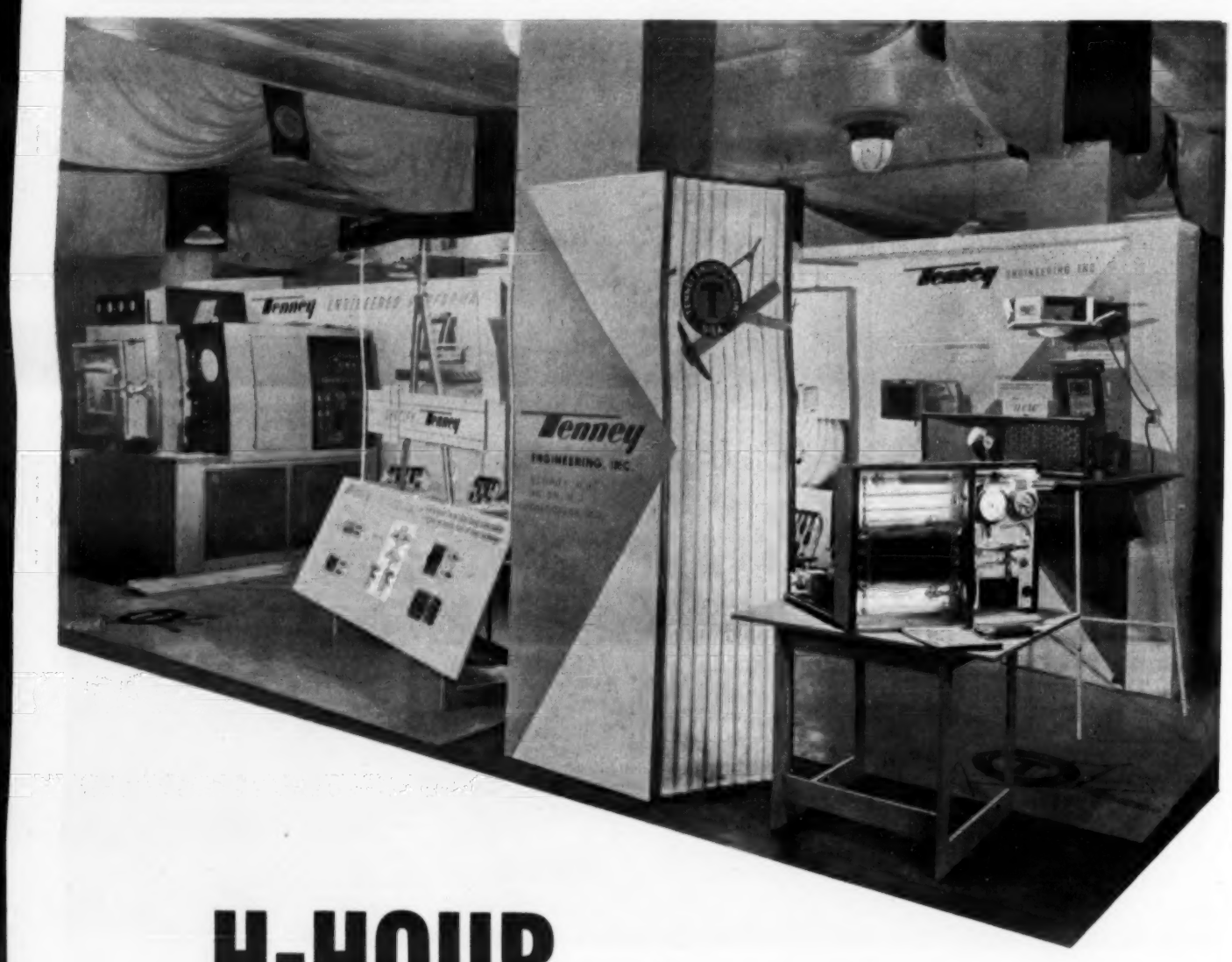

H-HOUR minus one

We took this picture of our booth at the Cleveland
R.E.M.A. Show one minute before the doors opened—and brother,
we're glad we did. A few minutes later we were mobbed . . . and
from then till the end of the show we were busy accepting
compliments for the appearance of the booth, and explaining our new products.

To you who visited us, thanks for coming.
It was great seeing you. If you weren't there, we're sorry
you couldn't make it. It was a great show.

Among all our lowside equipment we featured three new units—
"TW" Unit Coolers (the *easiest*-servicing commercial units), the
"V2" Unit Coolers (V-shape for 2-way air circulation),
and our AC4 Air Conditioning Coil. They were the
"hits" of our booth. We still have
some bulletins left . . . and they're yours for the asking. *Write today!*

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Engineers and Manufacturers of Refrigeration and Automatic Environmental Test Equipment

Commercial Refrigeration

Standardization = Efficiency, Economy

(Concluded from preceding page)

from eight manufacturers involving a total of 47 different sizes of open type compressors. Because of a service limitation of weight per compressor to 200 lbs., 11 compressors were withdrawn, so that 36 models from eight manufacturers were used in the study.

4 Studies Made

It was felt initially that standardization of open type compressors should be based on interchangeability of the compressor as a unit, and that parts interchangeability could be considered later. So four different studies were made, with no definite standardization pattern being immediately apparent.

The greatest problem in the first three studies was the large number of speeds in any given size group. One group, for example, had 60 different speeds running from 270 to 1,795 r.p.m. If compressors were to be interchangeable, the problem of matching such speed differences to a given application would be so complex as to nullify standardization. The fourth study finally pointed to a solution to the problem. It consisted, briefly, of considering each compressor in a size group as being operated at one speed in that group.

The results were four size groups, which were filled by two compressor sizes each operating at two speeds: A two-cylinder for the two smaller, and a four-cylinder for the two larger, size groups. Two companies had such families of compressors as part of their regular production. Further, each pair of compressors from each manufacturer has many parts which were interchangeable between the two and the four-cylinder size. Also, these two compressors filled all the requirements at 105° F. as well as 135° F. condensing temperature.

This fourth study is made possible by certain minor adjustments in service specification B.t.u. requirements in order to fit the final capacity curves of the compressors under consideration. The subcommittee recommended use of the fourth study, but also recommended 1,000 r.p.m. as the lowest operating speed to be considered.

The industry subcommittee then went into the question of dimensional standardization. Some items were roughly the same in the two families of compressors studied; and when this was the case, a standard was recommended.

Subcommittee Recommended:

a. That it is preferable to use a soldered or sweated piping connection for a military standard, and that available sizes and types be standardized.

b. That suction and discharge valves be standardized in accordance with the following:

1. Use one basic valve type with different size outlets.

2. With 1⅝ in. bolt spacing use 5/16 in. bolts 1¾ in. in length with 18 threads per inch.

3. Use suction and discharge valves of the following sizes: 2-cylinder compressors, ¾ in. suction with ⅝ in. discharge; 4-cylinder compressor, 1⅛ in. suction and ⅝ in. discharge.

c. 1. That a single flywheel and motor pulley common to all four models be considered standard;

2. That the taper on the shaft be .875 in. to .750 in. in 1 in. of length, the flywheel to be secured by a ½ in. 20 nut and a No. 6 Woodruff key.

3. That flywheels are to be provided for double belts with grooves deep enough to take either an A or B cross section.

d. That 2-cylinder compressors be limited to 60 lbs. maximum weight per unit without flywheel, and 4-cylinder compressors to 100 lbs. on the same basis.

e. That unloaders be eliminated if possible.

f. That an internal suction strainer is to be standard.

g. 1. That the standard compressors are to be operable on military standard oils, in accordance with government specifications;

2. That the lubrication system is to be forced feed and the oil pump is to be operable in either direction without manual adjustment.

h. That no limitation be placed on the design by suction pressure; that is, a compressor is not to be designed or limited to one pressure.

Some other dimensions of the two families of compressors varied slightly, and the subcommittee recommended that a working group be formed to arrive at a common set of dimensions. Examples of this are the mounting bolt layout and seals and seal mountings. Further, it is hoped that this working group can arrive at other interchangeable internal components by mutually agreeable design changes.

Although at present there are only two manufacturers which comply strictly with the standardization pattern as established by the subcommittee, it is understood that there are two or three additional manufacturers who either have designs on the drafting board or designs that can be modified to fit the recommended standard pattern.

Advisory Committee Meets

A meeting of the Industry Advisory Committee was held on Oct. 14, 1953 in Washington, D. C. At this meeting the recommendations of the subcommittee were discussed by the committee and all of the recommendations approved. A recommendation from my office has been sent to the Office of Standardization that the Working Group of interested manufacturers be called in the near future to discuss the recommendations mentioned above. Just when this meeting will be held I am not able at this time to say, but I can assure you that it will be just as quickly as possible.

In the meantime, the office of the Quartermaster General is making a study of the evaporators and condensers used in the refrigeration and air conditioning equipment of the Department of Defense under 10 hp. As soon as this information is assembled and analyzed roughly a meeting of the Heat Transfer Subcommittee will be called, and the data presented to them for their recommendations as to standardization of material, construction, and dimensions.

A form has been prepared by Consultants, Inc., on the hermetic type compressors, approved by the committee, and has been mailed to all manufacturers of hermetic compressors. Data collected on these forms will be analyzed and recommendations made in the hermetic field which will follow closely the pattern established in the open type compressor.

Savings for All

Suppose we pause for a few moments and consider what the foregoing can mean to each of us, whether we be in industry or in the military. Remember that at this time we are considering only open type compressors. Any potential savings in that field will, of course, be increased greatly when you include the savings resulting from similar standardization, parts reduction, and interchangeability in hermetic type compressors, in condensers and evaporators, in valves, in piping, fittings, etc.

First off, and obviously, the Armed Services can save money by having, for example, one type of Woodruff key, one type of valve bolt, and two sizes of suction and discharge valves instead of many of each as at present.

"All right," you say, "as patriotic Americans and taxpayers, we think that is fine, but what about us? What does this mean to industry?" It means that you in industry can save money for yourselves by this same sort of standardization. It means that you stock only one size of valve bolt instead of maybe four to six sizes. It means that you have one standard taper on all of your crankshafts, to use a single, or at most two designs of flywheel, with one size nut, and possibly a single seal, to mention but a few examples.

Until the working group meets and passes on many of the other details, these are the only concrete accomplishments that can be pointed out. But even these represent important savings to industry through common design and resulting procurement.

Motor Standardization

It appears to me that the refrigeration industry is, at this time, in the same position that the electrical industry found itself some years back in regard to their motor standardization. When the NEMA standards were finally set up a company could replace an outmoded motor with a new motor and be sure that it would fit because the NEMA standards of shaft size and height of mounting bolt holes, etc., made this possible.

In the field of refrigeration we have not yet reached that point. But the work which we have done with your whole hearted cooperation indicates a pattern which can be followed to your own monetary advantage and still retain any present design advantages.

Keep in mind that the points which have been discussed today and which will be proposed in the future are not points that you use in your sales work. Your factory tooling cares little whether an item has 18 or 20 threads to the inch. But to those of us who use and maintain the item, a decision on one or the other as a standard, but not both, can mean important monetary returns.

As I said before, we have pointed out to you ways in which we believe that you as an industry can effect real savings. We can write specifications for our own equipment which will insure standardization and savings for the Armed Services. The monetary returns to the refrigeration industry itself can only be effected by a cooperative and farsighted effort on the part of that industry.

'Through History with Standards'

NEW YORK CITY — Cleverly illustrated with amusing cartoons, a new booklet prepared by the American Standards Association graphically — and convincingly — explains the importance of standards and how they were developed.

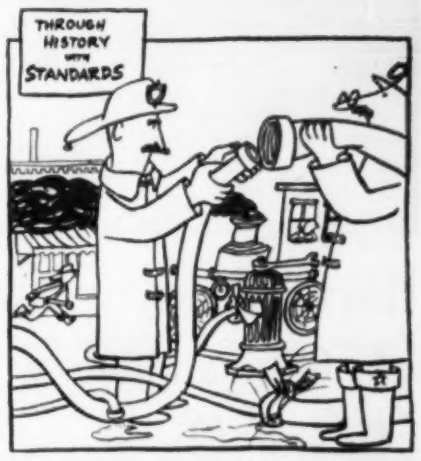
Under the title "Through History with Standards," the booklet tackles the subject in a light vein. Even the accompanying letter offers a humorous touch:

"The American Standards Association, a non-profit organization composed of 114 technical and trade societies, professional and consumer groups, plus 2,300 companies, might be called an organization devoted to preventing history from repeating itself. Through standardization, inconvenience, useless confusion, and sometimes tragedy have been stopped or avoided. . . ."

The booklet briefly explains the development of such standards as length of the yard, sizes of bricks, mass production of rifles, automobiles, and Venetian galleys (the "first true assembly line"); standard sizes for candle-butts and candlesticks, screw threads, railroad bridges and track gauges, rope, fire-fighting equipment, electric lamps, films, and traffic signs and signals in addition to safety standards and codes.

Text accompanying the cartoon reproduced here reads, in part:

"Lack of interchangeable fire-fighting equipment cost citizens of Baltimore millions of dollars when their city burned in 1904. A fire broke out on Sunday, Feb. 7, and when it got beyond control the local



fire department called on Washington, New York, and Philadelphia for help.

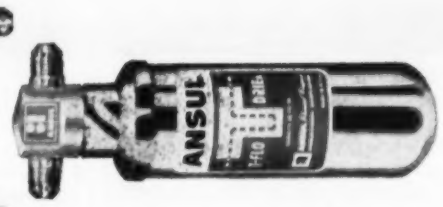
"Special trains rushed apparatus from these three cities on cleared tracks. Then the equipment stood idly by while 150 acres of the old business section was destroyed. Their hose couplings would not fit the Baltimore hydrants.

"Twenty-three years later, in 1927, fire-fighting equipment from 20 neighboring towns helped save Fall River., Mass., from total destruction in another great fire. The difference was in standardization. All equipment from the 20 communities worked interchangeably. The hydrant and hose connections had been standardized."

Single copies of the booklet are available free from ASA headquarters. A discount is offered on quantity orders.

. . . The best cure for a wet refrigeration system is an ANSUL T-*FLO* DRIER

VERTICAL, HORIZONTAL . . .



ANY WAY YOU INSTALL 'EM

ANSUL T-*FLO* DRIERS with ANDRITE provide GREATER CAPACITY, HIGHER EFFICIENCY, FASTER PICK-UP

HOW DRY SHOULD A REFRIGERANT BE?

. . . so dry that there can't possibly be a chance of moisture-corrosion or freeze-ups. "Freon-12" should contain no more than a maximum of ten parts moisture per million parts refrigerant. Recent test results in operating equipment show that corrosion starts in "Freon-12" at a moisture content of 15 to 20 ppm.

You can easily install Ansul T-*FLO* Driers in tight spots. They work efficiently in any position of installation. And, of course, replacement presents no problem since the fitting stays in the line.

Uniformly sized beads of An*drite,* Ansul's new deep-drying desiccant, contribute greatly to the versatility of T-*FLO* Driers. The desiccant cannot channel. And regardless of installation position of the drier, An*drite* retains its unexcelled ability to remove harmful moisture and acids.

Ansul T-FLO Driers are sold through Refrigeration Wholesalers exclusively

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MANUFACTURERS OF REFRIGERATION PRODUCTS, INDUSTRIAL AND FINE CHEMICALS, LIQUEFIED GASES AND FIRE EXTINGUISHING EQUIPMENT

Refrigeration Problems

and their solution

by Paul Reed

For Service and Installation Engineers

Paul Reed

Thermometers In Refrigeration Service (2)

One of the most useful things that two thermometers will do is to check the superheat at which a thermostatic expansion valve is operating, and which also shows how much of the evaporator is really active. This column has repeatedly urged that more attention be paid to the activity of the evaporator than is often done.

The only part of an evaporator that is very effective is the "active" part; that is, the part in which refrigerant is boiling, or changing from a liquid into a saturated vapor. The active part is the part that is really doing the refrigeration job.

Beyond the active part, the vapor is merely warming up or superheating, and in so doing is giving a very small amount of refrigeration. The part that is devoted to superheating reduces the part that is active, consequently reducing the available capacity of the evaporator and of the entire system.

Why then do we not operate the evaporator fully active, with no part of it devoted to superheating? Theoretically we would like to do just that, were it not for some practical considerations.

MUST SUPERHEAT SOMEWHERE

If we did not use the tail end of the evaporator for superheating the saturated gas, then this superheating would have to be done in the suction line or in a heat-exchanger. If the active part of the evaporator were 25° F., and the 25° saturated gas went directly into the suction line, the suction line would be cold and would "sweat" and drip water, which would be very objectionable on most installations.

We could use a heat-exchanger big enough to warm the 25° saturated vapor up to 50° or 60° (above the dew point temperature of the air around the suction line), so the suction line would not sweat. This could be good practice in some instances, and is sometimes done. The use of a heat-exchanger has the additional advantage of cooling the liquid refrigerant in the liquid line before it goes to the capillary tube or expansion valve.

So we can either provide a little more tubing or surface in the evaporator than is needed for the active part of the evaporator, and use that additional tubing to superheat the saturated vapor; or we can depend upon a heat-exchanger entirely. Either way costs money, so we choose the way that is cheapest, or most effective on that particular installation or application.

Or, we may use a little more evaporator, say enough to superheat the saturated gas about 10°, and also use a heat-exchanger to superheat it on up to 50° or 60° or whatever is desirable on the job in question. However we should superheat the saturated gas at least 15° or 20°, to keep the refrigerant from going to the compressor crankcase near saturation. How much the gas to the compressor should be superheated depends on the evaporator temperature, location of the suction line, etc.

TX VALVE NEEDS PART OF THE EVAPORATOR FOR SUPERHEATING

The method described in the previous paragraph is just about the best way if we are using a thermostatic expansion valve to feed the evaporator. A TX valve is a "constant superheat" valve, by which we mean that if we put it's bulb at the end of the evaporator as shown in Fig. 1, and just ahead of the heat exchanger, the TX valve will feed just enough liquid refrigerant to the evaporator to keep the evaporator all active except the small portion from B1 to C1 that allows the saturated 25° gas to warm or superheat 10°. Thus we say that the valve is operating on a 10° superheat.

TWO THERMOMETERS SHOW TX VALVE SUPERHEAT IN FIGURE 1

Here is where the two thermometers come in handy. If we clip one on at A1 just at the outlet of the TX valve, it should read 25°, and one clipped on at C1 where the TX valve bulb is located, it should read 35°, difference of 10°, provided that the valve is set for and operating on a superheat of 10°.

Suppose that we move the thermometer from A1 on down to a mid point M1 on the evaporator. It should still read 25°. In fact it should read 25° if placed anywhere on the *active* part of the evaporator, which is the part between A1 and B1. At B1 the thermometer should still read 25°; but if moved toward C1, it starts to rise rather rapidly, for at B1 the evaporator has run out of liquid refrigerant, so from B1 to C1 there is only gas being superheated.

TWO THERMOMETERS SHOW 15° SUPERHEAT IN FIGURE 2

But what if the thermometer at A2 should read 25° and the one at C2 reads 40° as in Fig. 2? Then the difference is 15°, which means that the TX valve is operating on a 15° superheat. Now it takes more of the tail end of the evaporator to superheat the gas 15° than it did to superheat it 10°, so the point at which the evaporator runs out of liquid, has moved back to a point that we will call B2. Thus the active part of the evaporator is now from A2 to B2, which is less than from A1 to B1 in Fig. 1.

As a result, the capacity of the evaporator is less than before, the suction pressure drops and this causes the compressor capacity to be reduced. To do the same refrigeration job, the unit will have to run longer and a larger part of the time, resulting in a higher cost of operation and lower humidity in the space cooled.

If, in Fig. 2, we move the thermometer from A2 down toward C2, it should still read 25° at M2, the midpoint; but as we continue to move the thermometer toward C2, we come to a place, B2, where it starts to read higher than 25°. This is an indication that B2 is the place at which saturation ends and superheating begins.

Thus by using the two thermometers, we can determine the superheat at which the TX valve is operating. In the condition shown in Fig. 2, we would conclude that the superheat was too high, so we would readjust the valve to get the thermometer at C2 to read 35°, that is, we would reduce the superheat setting of the valve. This would move point B2 to where B1 was in Fig. 1, and give a superheat operation of the TX valve of 10° instead of 15°.

TWO THERMOMETERS CAN DETECT EXCESSIVE PRESSURE DROP IN THE EVAPORATOR

In the above, we said that if we move the thermometer from A1 down toward C1, it would read 25° until it came to B1 in Fig. 1 or to B2 in Fig. 2. This was assuming that there was no pressure drop in either evaporator, or at least so little pressure drop that it's effect would not be noticeable.

In actual practice there may be enough pressure drop to cause a noticeable change in the temperature readings as the thermometer moves from A1 to B1 or from A2 to B2; that is through the active part of the evaporator.

Very much pressure drop through an evaporator is undesirable for several reasons. It tends to widen the superheat operation of the TX valve, thus reducing the amount of active surface of the evaporator. It tends to cause the TX valve to "hunt," and the amount of superheat to vary, causing the suction pressure to fluctuate up and down. The lower suction pressures reduce the capacity of the condensing unit and thereby, of the entire system.

Nevertheless, in actual practice there will always be some pressure drop through the evaporator. In order to get enough refrigerant velocity to facilitate oil return and prevent oil logging, there should be a little pressure drop. In the case of a 25° evaporator, a *maximum* pressure drop of 1½ to 2 p.s.i. through the evaporator is permissible; up to 3 p.s.i. for 40° evaporators, and down to 1 p.s.i. for 0° evaporators. Moreover, these maximums are enough for normal oil return.

Fig. 3 shows how pressure drop would become evident on our two thermometers. The thermometer at A3 still reads 25°, which for "Freon-12" corresponds to about 24.5 p.s.i. gage (p.s.i.g.). Therefore, with a 2 lbs. pressure drop through the evaporator, the pressure at the outlet end of the evaporator at point C3, will be 22.5 p.s.i.g.; at M3 it will be 23.5 p.s.i.g., and at B3 we will say that it will be about 23 p.s.i.g.

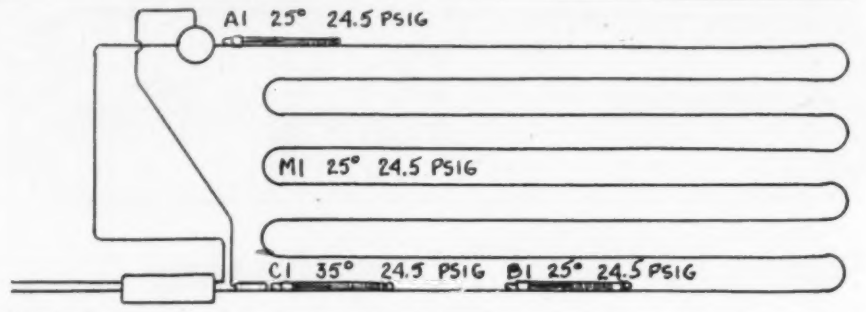

FIG. 1—Thermometers on evaporator with negligible pressure drop, with TX valve operating at 10° superheat.

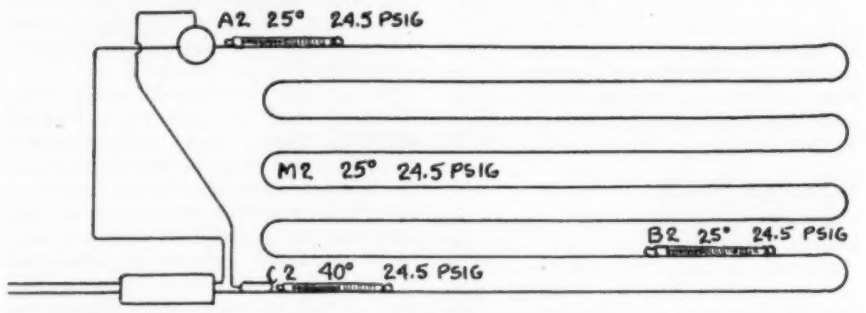

FIG. 2—Thermometers on evaporator with negligible pressure drop, with TX valve operating at 15° superheat.

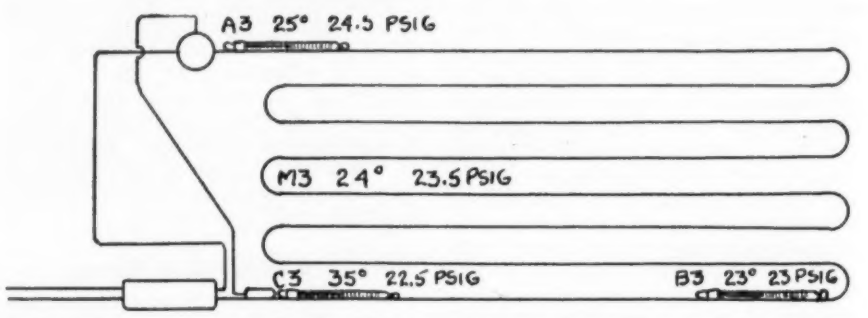

FIG. 3—Thermometers on evaporator with 2 p.s.i. pressure drop, with TX valve set for 10° superheat but, because of the evaporator pressure drop, is operating on a 12° superheat.

Since the boiling temperature of "Freon-12" at 23.5 p.s.i.g is 24°, a thermometer at M3 would read 24° likewise, at B3 where the pressure is 23 p.s.i.g., the thermometer would read 23° corresponding to 23 p.s.i.g. (These temperatures are not exact, but are correct to the nearest degree, which for purposes of illustration are close enough.)

The temperature at C3 would not correspond to 22.5 p.s.i.g., for the refrigerant is not saturated at that point. The power element of the TX valve would still respond to the 24.5 p.s.i.g. at the inlet of the evaporator, so it would maintain a 35° temperature at C3, the same as in Fig. 1.

Therefore, with the bulb of the TX valve at 35° as shown by the thermometer at C3, and point B3 being 23°, the difference of 12° would be the superheat at which the TX valve would operate, instead of at 10° for which the valve is set. Thus more of the evaporator would have to be devoted to superheating, leaving less surface for the useful, active part of the evaporator.

To offset the effect of pressure drop, perhaps the TX valve could be readjusted to maintain a still lower superheat that would enable the valve to actually maintain a 10° superheat instead of a 12° superheat, and thereby use the maximum amount of evaporator surface.

Or if an equalizer connection were used, the TX valve could maintain a 10° superheat on this evaporator even with the 2 p.s.i.g. pressure drop and without changing the superheat setting of the expansion valve; for the power element of the valve would be affected by the lower pressure of about 23 p.s.i.g. near point B3, so the bulb temperature would be held at 33° (23+10) instead of 35°. This would help the TX valve but not entirely restore the loss of capacity of the compressor due to the lower suction pressure.

Our thermometers would enable us to tell us if we had excessive pressure drop, for moving the thermometer at A3 toward B3 would cause the thermometer to gradually read a lower temperature, which would not be true if there were no pressure drop. However, beyond B3 the thermometer would begin to rise, and rather rapidly, as it was moved toward C3. In this way our thermometers would enable us to detect excessive pressure drop and to estimate fairly closely how much the pressure drop is.

The readings on the thermometers could not be taken accurately enough on ordinary thermometers to detect small pressure drops, but they would show up pressure drops that would be great enough to adversely affect the operation of the TX valve and the capacity and efficiency of the system as a whole.

It must be again emphasized that the two thermometers must be accurate for best results, and even for useful results they must be matched to one another; that is, if they are slightly inaccurate, they must both be off in the same amount and in the same direction.

(To Be Continued)

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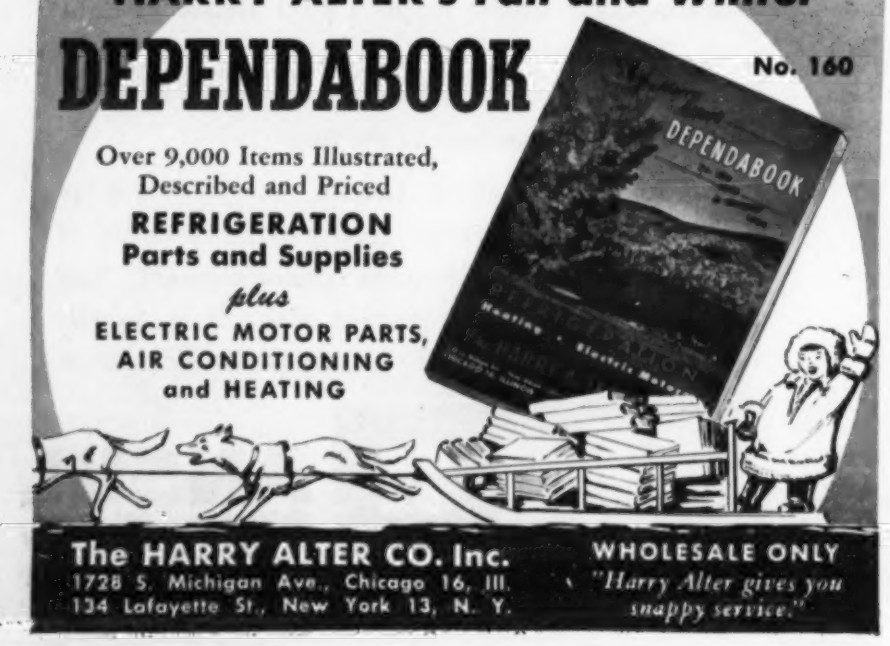

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WORLD'S LARGEST MANUFACTURER OF REFRIGERATION CONTROLS

ASRE Washington Conference--

(Concluded from Page 1, Column 2)

tributing the beneficial uses of the refrigeration cycle are on the verge of coming true," Jones declared.

"I say 'on the verge,' because we still have a big problem of adequately using all the information we have, and particularly do we have a problem of convincing the public what a very important part the refrigeration cycle has played, and is capable of playing, in their everyday lives," he warned.

In discussing the performance and operation costs of air-cooled packaged units, J. D. Lovely, chief engineer of Chrysler Airtemp, declared that "it now appears that the operating cost differential between water cooler and waterless units is different than we formerly understood."

He cited two installations in Dayton, Ohio homes of approximately the same size, one using a 3-hp. air-cooled unit, the other a 3-hp. water-cooled job employing city water. Operating cost for the air-cooled unit during the past cooling season was $48, he said, compared to $72 for the water-cooled unit.

According to Lovely, operating cost with an air-cooled unit is even lower than that of a cooling tower system, "unless power is over 2½ cents."

Another speaker, W. O. Kline of Frick Co., told the conference that package air conditioners "can be used successfully for close control of relative humidity when equipped with proper by-pass or reheat controls."

Motor Protection

Motor protection was discussed by H. Wolf of Worthington Corp.

Sales of packaged air conditioning units are still on too much of a seasonal basis, stated J. R. Hertzler, vice president, York Corp., in describing some marketing programs which can make the business more of a year-round affair.

Hertzler offered some sales figures which showed that 14 to 18% of the total yearly volume in packaged air conditioners of 2 hp. and over in size is done in each of the months of May and June, while in October and November the amount done is 2 or 3% of the total.

The York Corp. executive outlined a 15-point program for putting the business on a year-round basis, involving primarily sales, sales promotion, and sales training programs on an all-year basis, and financing plans for both dealers and ultimate consumers that would permit deferred or seasonal terms of payment.

Better salesmanship and salesmen who are better trained in the fundamentals of packaged air conditioning engineering are the keys to selling packaged air conditioning at a profit, declared D. V. Petrone, president, Typhoon Air Conditioning Corp.

Deploring the "bid" method of selling packaged air conditioners, Petrone urged that air conditioning dealers do a better job of selling themselves and their services to their customers, and getting a fair price, rather than trying to either get the job on a low-bid basis only, or trying solely to get by through selling the "monogram" of the manufacturer that they represent.

Quick Estimates Scored

Typhoon's president also cracked out at the "wet your finger, and take a quick look-around" school of job estimators, who most generally undersize or oversize a job for a packaged conditioner, and he also sounded a warning against the tendency for dealers to "sell what they've got in stock" no matter whether or not it might be the right size for the particular job.

A comparison of efficiency of absorption air conditioners with compression type units was touched upon by W. M. Simpson of Servel, who emphasized that it was "difficult to arrive at a true comparison, but this is largely academic anyway because the customer is interested only in first and operating costs."

R. G. Cordes of General Electric described G-E methods of quality control, summarizing that to improve control of quality a manufacturer must "take a good look at what you and others are doing; streamline your activities; get action on reports of quality control failures, and be enthusiastic about improving quality."

One of the best attended of the regular sessions was the one in which Cecil Boling of Bush Mfg. Co. presented the paper on "Heat Transfer of Evaporating 'Freon' With Inner-Fin Tubing." The paper was prepared by Boling, William J. Donovan, and Alan S. Decker, all of Bush, and was based on studies made since 1946.

Purpose of the paper and the study was to try to get an answer to the question "Is it possible to improve evaporator performance by the use of fins within the refrigerant passage?"

On the basis of tests completed with a water chiller using inner-fin tubing, and with comparisons made with a water chiller using bare tubing, the authors concluded that evaporator performance can be improved by the use of fins in the refrigerant passage. It was also demonstrated that the over-all size of highside units using inner-fin tubing might be much smaller.

In a discussion led by Otto Nussbaum of Kramer Trenton Co. taking issue with some of the conclusions reached in the paper, it was said that high pressure drop and problems in refrigerant distribution in the application of inner-fin tubing might offset some of the advantages, and also that the advantages might also be minimized in high temperature air-to-air applications of finned heat transfer equipment.

Freeze Drying

"Freeze Drying" (a low temperature, high vacuum) process has already made great contributions in the field of medicine and food preservation, and needs only further refinements on technological and engineering phases to make possible even much greater developments, reported E. W. Flosdorf of the F. J. Stokes Machine Co.

Pilot plant operations in freeze drying of orange juice, milk, fish fillets, and steaks and chops are already in the pilot stage, he said, and hold enormous possibilities for low-cost preservation and storage of foodstuffs, and a great dimunition in the size of the food packages.

Freeze drying processes have made recent contributions to medicine in the form of bone banks and in the preservation of human tissues from fresh cadavers, which have played a great role in the prevention of crippling effects of wounds suffered in battle actions, and from accidents in civilian life.

In the field of veterinary serums the freeze drying processes are assisting in creating healthier, larger animals which will aid in nutrition problems.

Another way in which the air conditioning and refrigeration industry can improve our food supply is by improving the climatic environment in which hogs are raised, according to the paper. "The Effect of Climatic Environment on the Growth Rate and Feeding Efficiency of Swine" by three members of the staff of Purdue university.

Best climate for the hog is around 60° F., the paper said, and figures were presented to show that savings in feed and in growth time would more than pay for the cost of an air conditioning system that would maintain such temperatures.

Dehydrating Compressors

"Factory Methods for Dehydrating Refrigeration Compressors" was the title of a comprehensive paper on this subject by L. W. Larsen and James Elliot of Tecumseh Products Co.

The authors said that there is a "growing carelessness" in handling moisture problems in refrigerants and discussed not only drying methods in the plants, but also methods of handling refrigerants, and charging methods, from the standpoint of keeping moisture content in refrigeration systems at the lowest possible point.

"No other development in modern times—the automobile, telephone, radio, and many others—has made the progress in seven years that the heat pump has accomplished since the war," H. E. Voegeli of American Brass Co., declared in the first talk given at the Heat Pump symposium.

Predicting a splendid future for the heat pump, Voegeli offered his opinion that the heat source for this device may ultimately be a solar heater which captures heat directly from the sun.

Theoretical considerations of the heat pump were discussed by Prof. J. L. Threlkeld of the University of Minnesota and Prof. E. B. Penrod of the University of Kentucky.

Studies reported by Prof. Threlkeld cited improvements of 37% to 64% in coefficient of performance theoretically possible by use of multiple stage condensing in a heat pump.

He also commented that theoretically at least, "Freon-11" is a considerably more efficient refrigerant for heat pumps than other refrigerants.

A mathematical method for determining length of ground coils required for heat pumps in three latitudes—Lansing, Mich., Lexington, Ky., and Atlanta—was outlined by Prof. Penrod, who also made the statement:

"Ground coils are okay in city lots as small as 30 x 50 ft. if the system is properly designed and installed."

In a review of heat pump installations in western Pennsylvania, C. L. Goodman of West Penn. Power Co. cited several successful installations using well water as the heat source.

First technical session covered such varied topics as "Heat Transfer Potential Between Moist Air and Water," "Environmental Research and Its Relation to Human Health and Comfort," "Measurement and Control of Humidity In Air and Gases," and "Thermometer Systems."

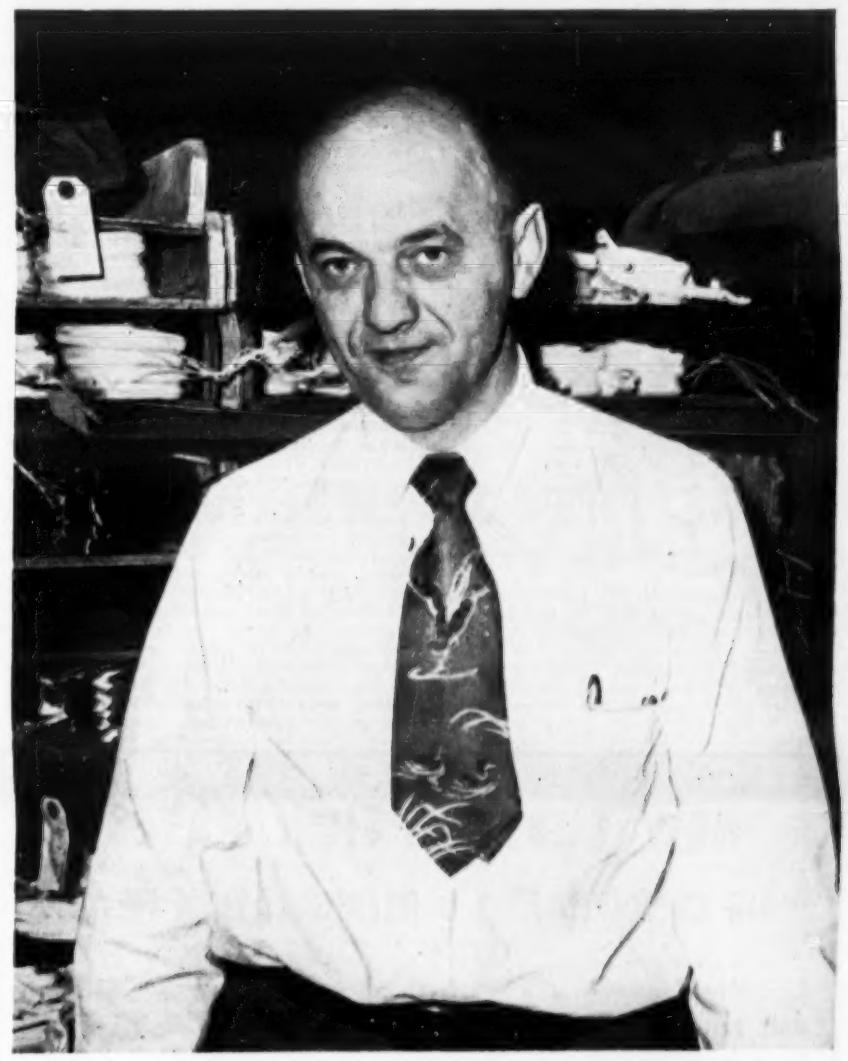
The first-named paper, prepared by F. Rasori and presented by Edward Simons, dealt with calculations of sensible and latent heat transfer from water to air such as involved in cooling towers and evaporative condensers.

Research that indicates "healthy people can easily make rapid adjustments to changes in environmental conditions" and that no harmful shock is experienced when going from an air conditioned space to a hot, humid atmosphere was outlined by Dr. F. K. Hick of the University of Illinois.

J. C. Hawkins of the Foxboro Co. described methods of measurement and control of humidity, and types of thermometer systems were outlined by L. E. Smith, Bristol Co.

The symposium on water conservation was devoted to discussions of cooling towers large and small, evaporative condensers, and air-cooled condensers, in talks given, respectively, by R. C. Kelly of the Cooling Tower Institute, E. B. Dunphy of Acme Industries, H. E. Rex of Carrier Corp., and O. J. Nussbaum, Kramer Trenton.

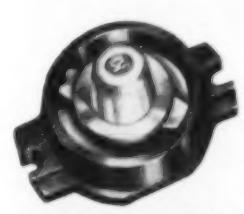
Domestic engineers in their engineering conference at this meeting conducted a panel discussion on recent developments in plastics.



Manager of Sealed Unit Service Company Praises KLIXON Protectors

MELROSE PARK, ILL.: Mr. Edmund H. Jaske, Manager of the Sealed Unit Service Co., Division of Service Parts Co., largest refrigeration repair and hermetic unit rebuilding company in the midwest, appreciates the motor burnout protection KLIXON Protectors provide.

"It takes an intimate knowledge of refrigeration service problems to realize what an important factor KLIXON motor protectors play in saving the public from major repairs caused by motor burnouts."



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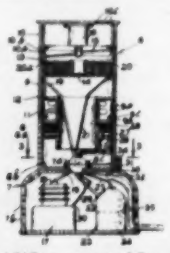
MANUFACTURERS OF MALLEABLE & GREY IRON PRECISION CASTINGS, REFRIGERATING EQUIPMENT, AIR VALVES, AUTOMATIC VENDING MACHINES

PATENTS

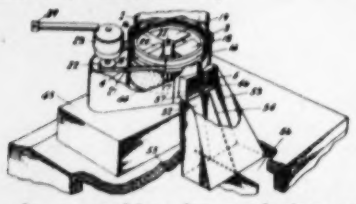
Week of August 11

2,648,202. HUMIDITY REGULATING APPARATUS. Cyril J. Otterholm, Minneapolis, Minn., assignor to Walter Haertel Co., Minneapolis, Minn.



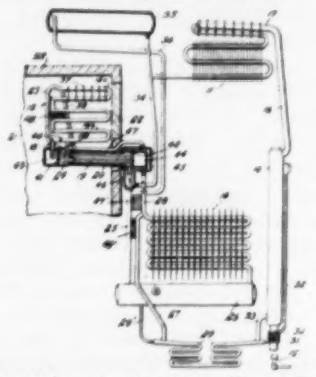
1. A dehumidifier assembly for use in conjunction with a refrigerant compressor, a condenser and a receiver having valve mechanism associated therewith for controlling the flow of refrigerant through the outlet thereof, the compressor and the receiver and the condenser each having an inlet and an outlet, the outlets of the compressor and the condenser being connected with the inlets of the condenser and the receiver respectively, said assembly including an evaporator having an inlet and an outlet adapted to be connected for fluid flow with the outlet of the receiver and the inlet of the compressor respectively, means for moving air across the surfaces of said evaporator for heat-exchange purposes and through the assembly, housing structure surrounding said evaporator constructed to cause at all times at least part of the air moved through the assembly to be moved over a path other than across said evaporator, and thermostatic control mechanism sensitive to outside air temperature for controlling the volume of air moved over the heat-exchange surfaces of said evaporator to thereby increase the over-all efficiency of the unit.

2,648,203. MACHINE FOR PRODUCING ICE CUBES AND CRUSHED ICE. Henry V. Heuser and William H. Fitzner, Louisville, Ky., assignors to Henry Vogt Machine Co., Louisville, Ky.



1. In a machine for producing congealed liquid selectively in the form of cubes or fragments comprising at least one tube alternately subject to a low temperature to congeal liquid therein in the form of a rod, and to thawing temperature to release the rod formed in the tube; a severing device below said tube carrying a cutting member and a plurality of fragmentizing members at different levels; gauge means for retaining the rod with the end protruding from the tube to be acted on by the severing member; and means for selectively bringing the cutter member and fragmentizing members into engagement with the exposed end of the rod to sever the guaged length.

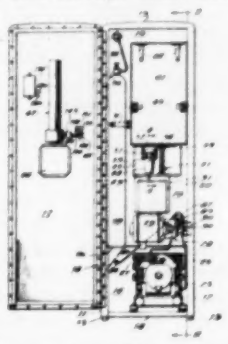
2,648,204. ABSORPTION REFRIGERATION SYSTEM. Gunnar Axel Grubb, Bromma, Sweden, assignor to Aktiebolaget Elektrolux, Stockholm, Sweden.



1. A refrigerator having a thermally insulated space, a refrigeration system including a condenser, an evaporator arranged to abstract heat from said space and in which refrigerant evaporates in the presence of inert gas, conduit means for conducting liquid refrigerant from said condenser to said evaporator, first means providing a first path of flow for gas flowing to said evaporator, second means providing a second path of flow for gas flowing from said evaporator, at least a part of said first means being disposed within said second means to form a heat exchanger, a part of said heat exchanger being disposed outside said space, and structure forming an enclosure about the part of said heat exchanger outside said space, said enclosure forming a part of said conduit means for conducting liquid refrigerant from said condenser to said evaporator.

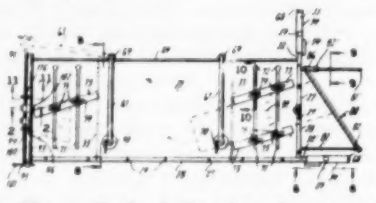
2,648,274. BEVERAGE VENDING MACHINE. Herbert A. Bendfelt, Oak Park, Ill., assignor to Mills Industries, Inc., Chicago, Ill.

1. A beverage vending machine comprising: a cabinet having therein an insulated compartment; a storage tank for a beverage liquid; a container for a second ingredient of the beverage, said tank and said container being disposed within said insulated compartment; means for refrigerating said beverage liquid and said second ingredients including first and second cooling coils within said compartment, and a refrigerant compressor, said first coil being arranged to receive said refrigerant from said compressor and said second coil being arranged within said storage tank to receive said refrigerant from said first coil thereby causing first refrigeration at said first coil, and thereafter pre-refrigeration of the beverage liquid to substantially dispensing temperature in said storage tank during periods of infrequent use of the machine and consequent slow transfer of such liquid from said storage tank; and means



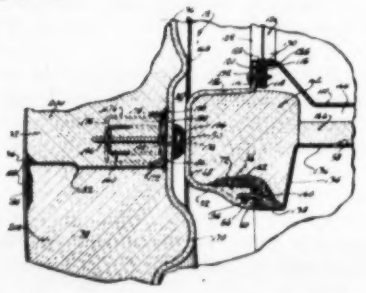
for measuring and conducting quantities of said beverage liquid and said second ingredient from said tank and said container to an accessible point of discharge at the front of the machine.

2,648,331. METHOD OF CUTTING DUCT SECTIONS. Charles Frank Engel, St. Louis, Mo.



1. The method of shearing sheet metal strips into bisymmetrical oblique-angled pieces, comprising fixing to table a pair of abutment bars parallel to each other at sufficient distance to accommodate and guide between them the strip to be sheared and at such angle to the table edge as is desired to be cut, advancing said strip across said table edge, shearing along said table edge, turning the strip over, replacing it between said parallel abutment bars, advancing it such distance that the said table edge marks the desired line of cut, affixing against the first-sheared edge a laterally- and angularly-adjustable gage, shearing along said table edge, removing the piece so sheared, turning over the remainder of said strip, replacing it between said parallel abutment bars, advancing the last-sheared edge against said gage, and repeating the five steps last mentioned until said strip is utilized as fully as is possible.

2,648,584. REFRIGERATOR CABINET CONSTRUCTION. Evans T. Morton, Chicago, Ill., assignor to Admiral Corp., Chicago, Ill.



6. A refrigerator of the multi-temperature multi-compartment type, including in combination a cabinet containing a plurality of compartments adapted to be refrigerated, heat insulating material in said cabinet insulating said compartments from each other, a single door adapted to close said compartments and having an inner panel of a thermally nonconducting material, an outer shell, and heat insulating material filling the space within said door, sealing gasket means carried by said door to seal said compartments from the atmosphere and from each other when said door is closed, and sealing means within said door to divide the insulated space therein into the same number of dead air spaces as there are refrigerated compartments, said sealing and dividing means being positioned within said door opposite the insulating material between said compartments, whereby circulating air within said door is prevented from effecting heat transfer between said compartments.

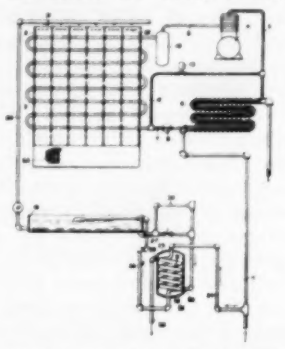
AVAILABLE FOR LICENSING OR SALE

Pat. 2,629,237. Chilled Water Distribution System and Means. Patented Feb. 24, 1953. In this distribution system, which includes a number of bubbler drinking stations, refrigerated water from a central refrigerating plant and unrefrigerated water are mixed in a conventional three-way valve blender adjacent each station for delivery of cooled water. The refrigerated water is pumped in a branch line through one inlet into the blender. The unrefrigerated water passes into the inner receptacle of a jacketed supply tank and thence through a second inlet into the blender. A controlled bleeder pipe continuously conducts blended water from the outlet pipe back into the second inlet pipe. This continuous bleeding insures that when the bubbler valve is opened after a period of non-use the water will not have warmed by standing. Another feature is that the cool waste water from the bowl is piped into the jacket of the supply tank and around the tank's supply pipe, before being drained away. This arrangement utilizes the refrigeration of the waste water to provide a certain amount of precooling of the supply water. The system is also adaptable for use in washing photographic film an dother elements in industry. (Owner) Mrs. Wilma P. Carnes, 5471 Village Green, Los Angeles 16, Calif. Group 35—84. Reg. No. 51,311.

Week of August 18

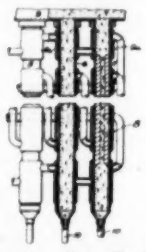
2,648,956. ICE MAKER. James L. Fletcher, Fayetteville, and Samuel C. Osborne, Syracuse, N. Y., assignors to Carrier Corp., Syracuse, N. Y., a corporation of Delaware. Application Jan. 19, 1950, Serial No. 139,366. 5 Claims. (Cl. 62—107.)

1. In an ice maker, the combination of a plurality of tubes in which ice is formed, means for refrigerating the tubes including a water-cooled condenser, means for heating the tubes to harvest formed ice, a water tank, means to circulate water from the tank through the tubes while the tubes are being refrigerated,



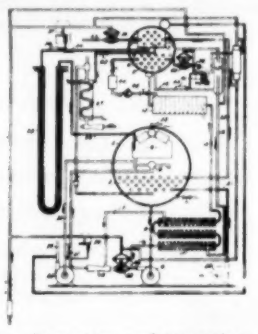
cooled water unused in the formation of ice returning to the tubes, and means for preventing substantial concentration of minerals in the cooled water without substantial loss of refrigeration capacity, said means including a control for maintaining a desired level of water in the tank, a line through which cooling water is supplied to the condenser, a line connected to the condenser water line for continuously supplying fresh water to the tank, a third line connected to a drain for bleeding water from the tank, a shell member in the third line containing an inlet adjacent one end and an outlet adjacent an opposite end, a coil extending through said shell connected to the fresh water line so that the stream of fresh water being supplied to the tank flows through said shell in counterflow heat exchange relation with the stream of water removed from the tank passing through the shell.

2,648,955. METHOD OF AND MEANS FOR CRUSHING OR CRACKING ICE. Aaron Lee and Eli Lieberman, Miami, Fla. Application Nov. 6, 1950, Serial No. 194,339. 10 Claims. (Cl 62—105.)



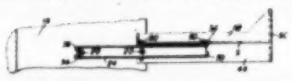
1. The herein described method of manufacturing crushed or cracked ice which consists of freezing water in elongated tubes to form elongated columns of ice, forcibly ejecting said columns from the tubes and splitting the columns of ice under the momentum of said columns and successively throughout the movement of ejection of said columns.

2,648,957. ABSORPTION REFRIGERATION SYSTEM, INCLUDING MEANS FOR PLACING STEAM CONDENSATE AND WEAK SOLUTION IN HEAT EXCHANGE RELATION. Alexis A. Berestneff, Syracuse, N. Y., assignor to Carrier Corp., Syracuse, N. Y., a corporation of Delaware.



1. In an absorption refrigeration system, the combination of an absorber, an evaporator, a generator, and a condenser disposed in a closed circuit, means for circulating strong solution from the generator to the absorber, and for circulating weak solution from the absorber to the generator, means for supplying a heated vapor to the generator in heat exchange relation with solution therein thereby condensing the vapor, a line through which condensate leaves the generator, a steam trap in said line, a pre-heater for weak solution, and a second line connecting the pre-heater with the steam trap to supply condensate from the generator to the pre-heater for passage in heat exchange relation with weak solution flowing to the generator.

2,649,351. REFRIGERATOR TRACK AND DRAWER CONSTRUCTION. Morris Rothchild, Brooklyn, N. Y. Application June 15, 1950, Serial No. 168,291. 2 Claims.



1. A cabinet structure comprising a pair of side walls, a plurality of guide rollers carried by each side wall, a pair of channel shaped guidees slidably of channel shaped guides slidably including a forward end and a rear end, an ear rising from the forward end of each guide, means at the rear end of each guide preventing removal of the guides from the guide rollers and adapted to engage certain of said rollers to limit sliding movement of said guides on said rollers, a drawer having a reduced lower portion received between said guides and side ledges above said lower portion overlying said guides, rollers carried by said ledges and projecting through the ledges to rest upon the guides, said ledges having slots therein slidably receiving said ears, and means carried by the lower portion of said drawer and extendable beneath the guides to lock the drawer on the guides and thereby prevent lifting of the drawer from the guides.

AVAILABLE FOR LICENSE OR SALE

General Electric Co. is prepared to grant non-exclusive licenses under the patents listed below on reasonable terms to domestic manufacturers.

Applications for license may be addressed to: Manager, Patent Services Department, General Electric Co., 1 River Rd., Schenectady, N. Y.

The following patents relate to: Refrigerating apparatus; power failure alarms for home freezers; mechanism for opening and closing a refrigerator valve or the like with snap action; shaft seal for a refrigerator compressor; and a retaining clamp for holding a container of silica gel in predetermined position within a refrigerator. Group 35—84.

Pat. 2.596,704. Alarm Switch. May 13, 1952. Reg. No. 51,432.

Pat. 2,604, 761. Two-Temperature Refrigerating System. July 29, 1952. Reg. No. 51, 433.

Pat. 2,606,429. Flue Cooling Arrangement for Cooling Refrigeration Units. Aug. 12, 1952. Reg. No. 51,434.

Pat. 2,610,873. Shaft Seal. Sept. 16, 1952. Reg. No. 51,435.

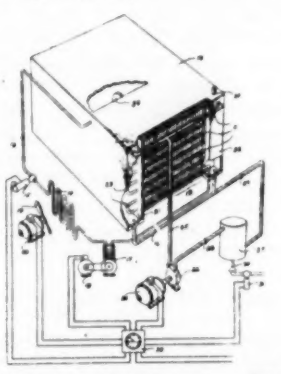
Pat. 2,617,867. Alarm for Power Failure. Nov. 11, 1952. Reg. No. 51,436.

Pat. 2,618,160. Snap Action Mechanism. Nov. 18, 1952. Reg. No. 51,437.

Pat. 2,625,360. Article Retaining Clamp. Jan. 13, 1953. Reg. No. 51,438.

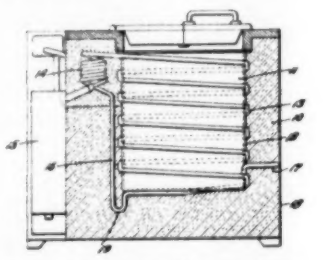
Week of August 25

2,649,695. APPARATUS FOR DEFROSTING LOW-TEMPERATURE COOLING COILS. Edwin Kohlstedt, Alta, Iowa. Application April 10, 1950. Serial No. 154,924. 2 Claims. (Cl. 62—4.)



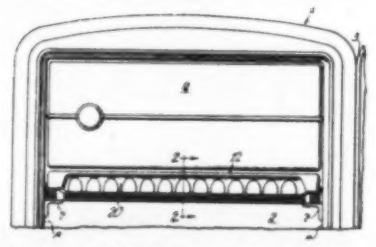
1. In a blower finned type refrigerating unit having cooling coils with portions thereof that extend beyond the fins; said refrigerating unit also equipped with a compressor, tanks surrounding the coil portions of said refrigerating unit that extend beyond the fins thereof, a valve in the cooling system of said blower finned type refrigerating unit between the compressor and cooling coils, a pump, a reservoir, conduits communicating between said reservoir, heatable fluid in said reservoir, said pump and said tanks making a closed circuit, means secured near said reservoir for heating its contents at times, and means for driving said pump at times.

2,649,696. EVAPORATING-CONDENSING HEAT TRANSFER SYSTEM. John Gudbrand Tandberg, Stockholm, Sweden, assignor to Aktiebolaget Elektrolux, Stockholm, Sweden, a corporation of Sweden. Application Nov. 23, 1945. Serial No. 630,273. In Sweden Dec. 22, 1944. 4 Claims. (Cl. 62—95.)



1. In combination with refrigeration apparatus comprising a cabinet having inner and outer walls and insulation therebetween, said inner wall defining a space, and primary cooling means, a secondary heat transfer circuit adapted to contain a vaporizable heat transfer agent, said circuit including a heat absorbing portion arranged to abstract heat from the space and a heat rejecting portion, said heat rejecting portion being arranged to be cooled by the primary cooling means to effect vaporization of said agent in said heat absorbing portion and condensation of the vaporized agent in said heat rejecting portion, and a part connected to receive condensed agent from said heat absorbing portion below the liquid level normally maintained therein during operation of said circuit, said part extending in the gap between said inner and outer walls and being constructed and arranged to promote evaporation of condensed agent therein and deliver such vapor to said heat absorbing portion.

2,649,697. COMBINED DEFROST PAN AND STORAGE TRAY. Ray C. Sandin, Oak Park, Ill., assignor to General Electric Co., a corporation of New York. Application Dec. 26, 1951. Serial No. 263,359. 6 Claims. (Cl. 62—103.)



1. In combination, a refrigerator defrost pan having spaced wall portions extending forwardly of a front wall thereof, and a tray-forming structure secured to and extending between said extending wall portions, the rear wall of said tray-forming structure being spaced forwardly of said pan front wall; said tray-forming structure having a top wall spaced above said pan front wall and sloping rearwardly and downwardly into overlapping relation therewith.

(To Be Continued)

NEW SUBSCRIPTION RATES

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New rates will be:

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12-14-53

WORTHINGTON 1954 package commercial air conditioner.

Worthington--

(Concluded from Page 1)

semi-gloss beige enamel finish trimmed with contrasting strips of gold, according to the company.

Simplified operating controls are concealed behind an enamel nameplate with a maroon background and gold lettering. The nameplate is hinged with a spring return to allow easy access to the controls.

'RESET' CONTROL CUTS SERVICE CALLS

A "Reset" control conveniently located on the selector switch concealed behind the nameplate promises freedom from temporary shut downs and service calls, Worthington said.

"Should the protective relays trip out because of water or power interruption they may be reset with a twist of the selector knob, without removal of panels," the company stated.

"Three-dimensional" air circulation is featured with the new units. Horizontal louvers of an airfoil shape to reduce air resistance, and vertical vanes are adjustable individually to allow circulation of air in any chosen direction.

VERTICAL AIR INTAKE COLLECTS LESS DUST

"New vertical air intake prevents collection of dust and dirt, resulting in less chance of soiling materials which may brush against the unit," the company pointed out.

Fresh winter air can be tempered with a two-row steam or hot water heating coil, available as an accessory. A spray type humidifier, which can be mounted between the heating coil and the cooling coil is also available as an accessory.

The new unit also incorporates other improvements such as a new hermetically-sealed compressor, double oil pump protection, more efficient motor cooling, resilient mounting, and new quietness.

The package unit is available in capacities of 3, 5, 7½, 10, and 15.5 tons.

The residential air conditioner in 3 and 5-ton models will be identical in features to the comparable size package air conditioners except for the cabinet design and some of the controls.

AIR CONDITIONING IS STRONG DEFENSE AGAINST SLUMP

Lawler told the distributors that in air conditioning they have a strong defense against any business declines.

"In fact," he said, "even if we were to be faced with a general business recession, I would expect the volume of air conditioning business to keep right on increasing. There are even reasons to argue that a recession would have a positive effect on the sales of air conditioning systems."

Among his reasons were: sharpened competition for retail sales would spur air conditioning sales to retail stores; manufacturers will look to air conditioning to lower production costs and improve the quality of their products; competition in the housing field will be such that new homes will have to be offered fully air conditioned while rental properties will have to be air conditioned to remain rented to capacity.

Regarding 1954 sales, Lawler said: "We expect a 40% increase in our total volume of sales in the coming year, with an increase of 60% in the sales of commercial packaged air conditioners alone."

Wishart Elected--

(Concluded from Page 1)

vice president, and former treasurer.

Others retiring are R. P. Brown, vice president and chairman of the board of the company's Industrial Div. in Philadelphia; George A. DuToit, vice president in charge of manufacturing; and L. Morton Morley, vice president and formerly in charge of sales for the Industrial Div.

Honeywell, Huff, and Brown will continue as directors.

Sweatt, in taking over the chairmanship of the board, suceeds the man he also succeeded as president. Mark Honeywell was president of the firm from 1927 until 1934.

SWEATT SPENT ENTIRE LIFE WITH COMPANY

Sweatt has spent his entire life with the business and, as its head for nearly two decades, has directed it through a period of tremendous growth. When he became president in 1934, the company had 1,000 employes and annual sales of slightly more than $5,000,000. Today, Honeywell employs 24,000 persons in factories and sales offices in both the United States and foreign countries, and has annual sales approaching $200,000,000.

Sweatt started with a predecessor company, Minneapolis Heat Regulator Co., headed by his father, W. R. Sweatt. Harold was still at the University of Minnesota when his father elected him a vice president of the family-owned firm. But when he was graduated, he demoted himself to clerk, worked in the factory and office, and tramped the highways as a salesman. He served as vice president until his election as president.

WISHART IS FOURTH PRESIDENT

Wishart, at 55, becomes the fourth man to hold the presidency of Honeywell in the firm's 68-year history. An executive of the company for nearly a decade, he has had an active voice in shaping company policy and in recent years has assumed increasing management responsibilities.

As vice president in charge of manufacturing, he directed the company's expanding Minneapolis production operations throughout the postwar years. Approximately a year ago, he was named to a newly-created top managerial post—vice president and general manager—and since that time has carried out many of the duties formerly handled by Harold Sweatt, as president, and C. B. Sweatt and W. L. Huff as executive vice presidents.

A graduate of the U. S. Naval Academy, Wishart spent seven years in naval service before embarking on his business career. Prior to joining Honeywell in 1942, he spent many years in various assignments in the automobile industry. He became superintendent of manufacturing for Honeywell in 1943, factory manager in 1945, vice president in charge of manufacturing in 1946, and vice president and general manager in 1952.

Like Wishart, the two new directors — McDonald and Wilson — are longtime members of the management team.

McDonald, a native of Canada, was president of his own company—the T. McDonald Co., Ltd., of Toronto—prior to joining Honeywell in 1931 as manager of its Toronto office. He was named vice president of the company and transferred to the executive offices in Minneapolis in 1938.

Wilson joined Honeywell in 1941 as assistant to the president. Previously, he was with J. & W. Seligman & Co., New York investment bankers. Wilson has been a vice president of the company since 1943.

Government Contracts

DEPARTMENT OF DEFENSE

Description	Quantity	Invitation No.	Opening Date
Department of the Army, Corps of Engineers, Office of the District Engineer, Omaha District, 1709 Jackson St., Omaha 2, Neb.			
On or about 3 Dec 53, this office will issue Invitation to Bid on the construction of 100-bed Hospital, Ellsworth Air Force Base, Rapid City, South Dakota. All Contractors interested in inspecting the site of the proposed work should contact the Area Engineer, Corps of Engineers, Ellsworth Air Force Base, Rapid City, S. D. The work will include: Hospital—3-story masonry construction (88' x 63' with 4 wings, 155' x 66', 141' x 41', 75' x 41', and 151' x 85') with automatic sprinkler system, communication and signalling system, air conditioning system. Work will be separated into schedules for bidding. Specifications and bid forms will be furnished by this office upon request. A deposit of $100.00 will be required for each set of drawings to insure their return in good condition. This deposit should be in the form of a United States money order or a certified check payable to "The Treasurer of the United States" and mailed together with the request to the District Engineer, Omaha District, Corps of Engineers, 1709 Jackson St., Omaha 2, Nebraska, Attn: Construction Division. Plans and specifications will be on file in this office and in the office of the Area Engineer, Corps of Engineers, Ellsworth Air Force Base, Rapid City, South Dakota, where additional information concerning the proposed work may be obtained. Plans and specifications will also be available for inspection at the following places:	Job	(ENG-25-066-54-27)	28 Jan 53
Kansas City District, Corps of Engineers, 601 Davidson Bldg., Kansas City, Mo.			
Denver Area, Corps of Engineers, Bldg. No. 52, Denver Federal Center, Denver, Colo.			
St. Paul District, Corps of Engineers, 1217 U.S. Post Office and Customhouse, St. Paul, Minn.			
Rock Island District, Corps of Engineers, Clock Tower Bldg., Rock Island, Ill.			
Chicago District, Corps of Engineers, 475 Merchandise Mart Plaza, Chicago 54, Ill.			
Albuquerque District, Corps of Engineers, 2632 Central Ave., S.E., Albuquerque, N. M.			
Vicksburg District, Corps of Engineers, P.O. Box 60, Vicksburg, Mississippi.			
Warm air heating and humidifying system with controls.	1 lot	(CIVENG-22-052-54-74-B)	14 Jan 54
Bureau of Ships, Washington, D. C.			
Pump refrigeration condenser circulating 10 g.p.m.	14	549-734Q	16 Dec 53
Humidistats human hair element type for operation on 110-volt 60-cy. single phase AC minimum effective controlling range shall include 20% to 90% relative humidity. Controlling switch shall have snap action and shall close or make contact on rise in humidity, calibration shall be made at approx. 30% relative humidity at approx. 70% F dry bulb temp., electrical rating shall be a minimum of one ampere at 110 volts or less.	776	549-770Q	26 Jan 54
Blower turbine driven forced draft for the following operating conditions, air delivery rated 35,600 c.f.m. at 115 in. wg static pressure normal 27,000 c.f.m. at 61 in. design air condition 68° F. dry bulb temp. 50% relative humidity 29.92 in. hg barometric pressure blower static eff 65% at rated boiler overload operation speed 65,000 r.p.m. at rated operation steam condition 560 p.s.i.g. 840° F. total temp 15 p.s.i.g. exhaust steam consumption 21,000 lbs. per hour maximum—11,000 lbs. per hour normal salt water coolant design temp. 85° F. max. weight 4,500 lbs. Spec. SHIPS B-1345 dated 3 Nov. 1953.	27	549-762Q	21 Dec 53
Yuma County Airport, Yuma, Arizona			
Air conditioning for Headquarters Bldg. T-697, Yuma County Airport, Yuma, Arizona.	Job	(02-606-54-9B)	21 Dec 53

GENERAL SERVICES ADMINISTRATION

Description	Quantity	Reference No.	App. Bid Date
Business Service Center, General Services Administration, Region 3, Washington, D. C.			
Gases.	Indef. Term	CLASS 51, PART III	21 Dec 53
Business Service Center, General Services Administration, Region 4, 50 Seventh St., N.E., Atlanta, Georgia			
A 12-ton Freon refrigerating machine, U.S. Post Office and Courthouse, Rome, Ga.	Job	CR 4-678	25 Feb 54

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

National Advisory Committee for Aeronautics, Langley Field, Virginia			
Air conditioners—window	1 lot	L-6589	18 Dec 53

U. S. DEPARTMENT OF COMMERCE

Procurement Branch, Civil Aeronautics Administration, Washington 25, D. C.			
Fans, propeller type, 16 in., 1,600 c.f.m. 115/230 V., 60 cy. motor, accord. Spec. CAA-59B and Dwg. C-2134.	20 to 300 ea.	6160	29 Dec 53
Fans, propeller type, 20 in., 3,200 c.f.m., 115/230 V., 60 cy. motor, accord. Spec. CAA-59B and Dwg. C-2134, with and without guards.	5 to 100 ea.	6160	29 Dec 53

CONTRACTS AWARDED THROUGH DEC. 7

Fort Bragg, Purchasing & Contracting Branch, Fort Bragg, N. C. Air conditioning systems for bldgs. No. T9-43 and 577, Fort Bragg, N. C.—Job, $34,420.—Ross & Witmer, Inc., 1641 W. Morehead St., Charlotte, N. C. Prime Contractor advises approximately 25% will be subcontracted and has subcontracts open for the following: Modification and improvement to buildings and desires that subcontractors be located nearby.

ENGINEERS
For Air Conditioning Firm In
LOS ANGELES AREA
Expanding engineering department, Research & Development.

NON-DEFENSE
CHIEF PROJECT ENGINEER
Minimum 3 yrs. experience—project development & supervision, capable of personnel leadership, design & theoretical calculation of heating & ventilating equipment. Write progress reports & prepare technical information & manuals.

PROJECT ENGINEERS (2)
Graduates, 3 yrs. product design in heating & ventilation equipt., metal fabrication experience.

MECHANICAL ENGINEER
Graduate. No experience.

Assistance to relocate in Los Angeles area. All replies confidential.
Box 4456, Air Conditioning & Refrigeration News.

SELL ROOM AIR CONDITIONERS
MANUFACTURER'S REPRESENTATIVE
OPPORTUNITY

A well-known company, a nationally-advertised brand doing a large window room air conditioner business offers a direct factory connection. Following key markets open:

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CHARLOTTE, NORTH CAROLINA
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CHICAGO, ILLINOIS
CLEVELAND, OHIO
DALLAS, TEXAS
HUNTINGTON, WEST VIRGINIA
KANSAS CITY, MISSOURI
LITTLE ROCK, ARKANSAS
OKLAHOMA CITY, OKLAHOMA
OMAHA, NEBRASKA
PEORIA, ILLINOIS
PHILADELPHIA, PENNSYLVANIA
RICHMOND, VIRGINIA
ROANOKE, VIRGINIA
SPRINGFIELD, MISSOURI
SOUTH BEND, INDIANA

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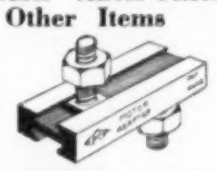
Write Box 4457, Air Conditioning & Refrigeration News

MOTOR BASE ADAPTERS
Sell Many Other Items



Keep them in stock. Servicemen will pick up adapters and motors, carry them in their cars, and complete service on the job in one call. Eliminates delay of having motors away for rebuilding. Adapters are easy to install, fit any base. No rotor shaft too long or too short. They also bring you more sales in motors, belts, pulleys, controls, etc.
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RATES for all other classifications $7.50 per insertion. Limit 50 words. 15¢ per word over 50.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other addresses by actual word count. Please send payment with order.

POSITIONS WANTED

ATTENTION, MANUFACTURERS—Maybe you don't need a full-time writer for your instruction sheets and manuals. In that case, it will pay you to look into a new writing service offered by a practical refrigeration and air conditioning man who can handle clear "American" English. VIRGIL C. JAMES, Cuba, Missouri.

SALES ENGINEER: Experienced in all levels of air conditioning sales. Capable of developing long-range associations with architects, engineers, and major accounts. Can handle all phases of design. Training and experience in sales and engineering, including factory schools. BOX 4451, Air Conditioning & Refrigeration News.

SALES ENGINEER-ESTIMATOR, thoroughly competent in air conditioning, refrigeration, heating, gas and oil burning. Technical graduate, professional engineer. Seeking connection with established, reputable contractor in high potential area. Twenty years' experience. Prefer to work in terms of gross profit, but will entertain any reasonable proposition. BOX 4458, Air Conditioning & Refrigeration News.

POSITIONS AVAILABLE

MANUFACTURERS' REPRESENTATIVES wanted by Midwest manufacturer of redwood natural draft and steel induced cooling towers in 5 to 60 ton range. Must have established trade and be calling on air conditioning and refrigeration jobbers and dealers. In replying, include lines now being sold and areas served. BOX 4449, Air Conditioning & Refrigeration News.

LARGE MANUFACTURER wants product manager in sales department. Equipment includes both heating and cooling units. Engineering degree and extensive industry experience required. Age below 40. A proven man required, with ability to hold top position job, with excellent future opportunities. Starting salary $8,000.00 to $10,000.00. Eastern location. Please supply complete description of education and experience. Reply BOX 4450, Air Conditioning & Refrigeration News.

MANUFACTURER'S REPRESENTATIVES wanted by manufacturer of open-type refrigerated display cabinets. We have high distributor and consumer acceptance. Cabinets are moderately priced, well-engineered. Change of selling procedure makes this opportunity available January first. Reply should state territory covered, line represented. BOX 4459, Air Conditioning & Refrigeration News.

EQUIPMENT FOR SALE

CUT COOLING costs. Self-closing doors mounted just inside your cooler will keep the cold inside during loading or unloading, when it is advantageous to prop the door open. We have in stock 3'6" x 6'6" genuine York-Jamison double batten auto-close doors, complete with removable track heads for 7'2" track. 1½" corkboard insulation, 14-gauge metal clad. Freight prepaid in United States. Door height will be altered for anything up to 11'2" track for $15.00 additional. BIMEL COMPANY, Cincinnati, Ohio.

ATTENTION SERVICEMEN — Send for our 1953 Catalog. Relays, expansion valves, controls, dehydrators, V belts, open & hermetic units. All new merchandise at great savings up to 50%. Sold on Money Back Guarantee. WALTER W. STARR REFRIGERATION, 2833 Lincoln Ave., Chicago 13, Illinois.

MISCELLANEOUS

NORGE SEALED units remanufactured or exchanged. Immediate delivery from stock. 2 year warranty. Freon refrigerant. Write for prices and shipping instructions. Genuine Norge terminals for Norge sealed units. Sets of three $1.45 plus postage. MODERN REFRIGERATION CO., INC., 12541 E. McNichols Road, Detroit 5, Mich.

Equipment For Sale

We are closing out the following stock from a manufacturing operation:

	LIST	NET
3—24" x 30" 4 row DX cooling coil with valve	$1,000.00	$300.00
1—36" x 60" 2 row steam coil	300.00	90.00
1—36" x 60" 2 row steam coil	400.00	120.00
1—conditioning unit—suspended type—nominal 5 tons rating 4 row DX cooling coil with valve—2 row steam coil—motor—without filter section.	1,135.00	340.00
1—conditioning unit—as above without heating coil	1,000.00	300.00

If interested, contact
MidWest Sales and Service, Inc.
1503 Prairie Ave., South Bend 14, Indiana—Phone 7-3365.

Snacks can be prepared without fuss or muss on this new Frigidaire Imperial electric range. The non-slide aluminum griddle being used by this homemaker is designed to fit the surface heating unit. This range permits the homemaker to cook seven ways—deep-fat fry, stew, griddle-fry, broil, bake, roast, and even pop corn—without using an extra pot, pan, or skillet. All necessary equipment is self-contained.

Frigidaire Range Models for '54--

(Concluded from Page 1, Column 3)

simmer, griddle-fry, broil, roast, bake, and even pop corn—all with equipment that is an integral part of the range.

The new line of ranges is comprised of 12 separate porcelain-finished models in 21, 30, and 40-in. sizes. Roberts emphasized that the line is highly diversified from the standpoint of features and styling. The wattage of all 6-in. surface heating units has been increased to afford faster heating.

Five Imperial ranges have a distinctive appearance, with the white porcelain cabinets set off by new silver, ebony, and chromium trim.

An Imperial range, equipped with two complete baking, roasting, and broiling ovens (RT-70), is top model of the line. It is available with either a conventional oven door or the new non-fogging glass "Visi-Door" (RT-70G) on the large oven. In addition to the automatic operation of the interior light, a special switch built into the door, lights the inside without opening the door.

'MULTI-DUTY THERMIZER'

Outstanding new development is the "Multi-Duty Thermizer," which not only can be used for simmering, baking, and roasting, but deep-fat frying and even corn popping. In addition, it can be used to steam blanch, and to sterilize the baby's bottles.

Included is a 6-qt. utensil and tight-fitting lid, perforated metal basket with both side and brim handles, baking rack, adjustable trivet, and a metal stirring attachment for popping corn. An automatic temperature control prevents overheating A signal light on the back panel shows when the proper temperature has been reached for deep-fat frying.

The Thermizer can be quickly converted into a fourth surface cooking unit by simply removing the the utensil and lifting the "Radiantube" unit into position.

Another important feature is a simplified Imperial "Cook-Master" oven clock control which permits fully automatic cooking of entire oven meals. The new Cook-Master has a single control knob. A new electric time-signal chimes when cooking has been completed and the oven shuts off. A new oven signal-light operates constantly when the oven is in use.

Designed especially to fit the Radiantube surface cooking unit is a new Frigidaire "Kant-Slide" griddle for pancakes, bacon, eggs, and hamburgers, or grilling sandwiches. Two utensils can be kept warm or foods cooked slowly in both at the same time on this new griddle, and because it requires only one surface unit for heating, it conserves electricity, Frigidaire pointed out.

A new high back panel and full-width fluorescent lamp provides lighting, which not only illuminates the entire cooking area, but highlights the wall above the range. The top of the lamp forms a handy shelf for a special condiment set which is part of the regular equipment.

Three other Imperial models have similar styling and design features.

'WONDER OVEN'

For example, one model (RT-60) features the "Wonder Oven," which in effect can be used as two separate ovens or a single large oven. It is equipped with a removable divider and heating units for upper, middle, and lower positions. This oven will broil a steak above and bake a cake below, at the same time, but at different temperatures. This range has a full-sized warmer drawer.

Two other single-oven Imperial models (RT-45 and RT45G) are equipped with a storage drawer instead, and one of these (RT-45G) features the new glass Visi-Door.

The ovens of all Imperial models are of "Quick-Clean" design. Upper and lower heating units, shelves and even the shelf guides can be removed for cleaning. All parts but the heating units can be washed in the sink like any dish. The inside of the oven is of one-piece steel construction with rounded corners and a smooth porcelain-finish. A full-width drawer below provides extra storage space for utensils.

There are three deluxe ranges. Top deluxe range is a 40-in. model (RT-28) with two full-sized ovens. This range features a new high back panel and divided cooking top.

All switches are located on the back panel, together with the deluxe Cook-Master oven clock control, automatic appliance outlet, electric time-signal, oven signal-light, surface unit signal lights, and full-width fluorescent lamp. Both ovens are equipped with automatic interior lights. There is a full-width storage drawer below.

Another deluxe range (RT-20), has the same styling, but is equipped with a single oven, and Thermizer cooker, together with a full-sized utensil storage drawer. A third deluxe model (RT-10) similarly styled, has many of the conveniences and features of top line models,

The new Imperial Cook-Master oven clock control and deluxe styling have been incorporated into the design of the top model (RT-38) of the 30-in. ranges.

The large oven has a gross capacity of 6,275 cu. in. Also, included are an automatic oven light, electric time signal, surface unit signal lights, automatic appliance outlet, and a full-width storage drawer.

Another 30-in. model (RT-30) has the same basic features but is not equipped with the automatic cooking control or fluorescent lamp.

Two 21-in. ranges round out the line.

Suggested retail cash prices of the ranges are: RT-3, $169.95; RT-4, 179.95; RT-10, 199.95; RT-20, 259.95; RT-28, 319.95; RT-30, 199.95; RT-38, 249.95; RT-45, 349.95; RT-45G, 359.95; RT-60, 399.95; RT-70, 449.95; RT-70G, 459.95.

Philco Purchase--

(Concluded from Page 1, Column 3)

(On the basis of current market value of Philco's common stock, the indicated purchase price is close to $2 million, it was reported.)

A special meeting of Dexter stockholders will be held later this month to approve the agreements between the two companies.

Dexter's sales last year totaled $12,152,212. However, net income amounted to only $66,849, or 33 cents a share. In 1950, its peak year, the company earned slightly over $1 million, or $5.02 a share, on total sales of $13.8 million.

GREATER PROFITS WITH THE Moisturizer VEGETABLE CASE

AVAILABLE IN 5'- 8'- 10' SIZES

IF ITS NOT A NOLIN ITS NOT A MOISTURIZER

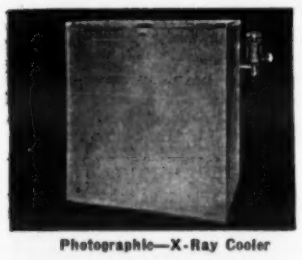
NOLIN MANUFACTURING COMPANY

1408 LLOYD STREET MONTGOMERY, ALABAMA

For Recognized Quality - Extra Gallons

Sell Your Condensing Unit - Filtrine Water Coolers

Mess Hall—Cafeteria Cooler



Photographic—X-Ray Cooler

Typical "Packaged" Circulating Chilled Water System

Promote your own condensing unit sales with Filtrine's 20-year-life construction . . . high capacity . . . Super Storage . . . more than 40 years' dependability.

COOLERS FOR MESS HALLS — CAFETERIAS

Conform with Fed. Spec. 00-C-566b

COOLERS FOR X-RAY & PHOTOGRAPHY

PACKAGED CIRCULATING CHILLED WATER SYSTEMS

REMOTE COOLERS FOR ALL USES

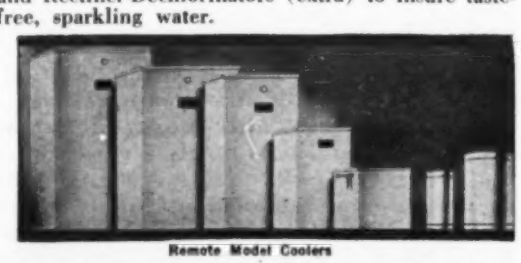
Sell your condens'ng unit with Filtrine Stainless Steel or Duco finished cabinets, equipped to suit with top/side shelves, bubblers, glass-fillers. Can be Taste-Master equipped to remove chlorine, rust, sediment from water.

Taste-Master

Sell your condensing unit with Filtrine models repeatedly named by V.A., Signal Corps, Air Force, etc. for X-ray and photo-labs. Under counter design and floor-mounted models with stainless steel work-table top. Filters (extra) to prevent scratched and pin-holed negatives.

Sell your condensing unit! Systems for drinking or processing water—completely packaged with pump, controls, your condensing unit factory installed. Capacities 5-400 g.p.h.; storage 5-150 gals. Filters and Rectifier-Dechlorinators (extra) to insure taste-free, sparkling water.

Sell your condensing unit with remote models for new and replacement jobs—all applications. Capacities 10-1000 g.p.h.; storage 7-300 gals. Filters, Rectifier-Dechlorinators available for all sizes.



Remote Model Coolers

Write for catalog and Specification Guide

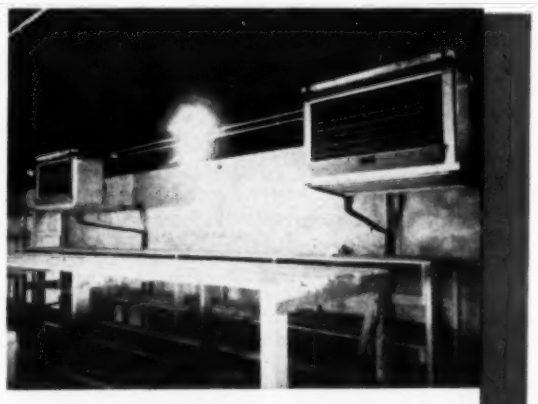
Filtrine HIGH EFFICIENCY FILTRINE MANUFACTURING COMPANY · BROOKLYN 5 · N. Y.

"Water Coolers and Filters for 40 Years"

BUSH Therm-O-Cycle System

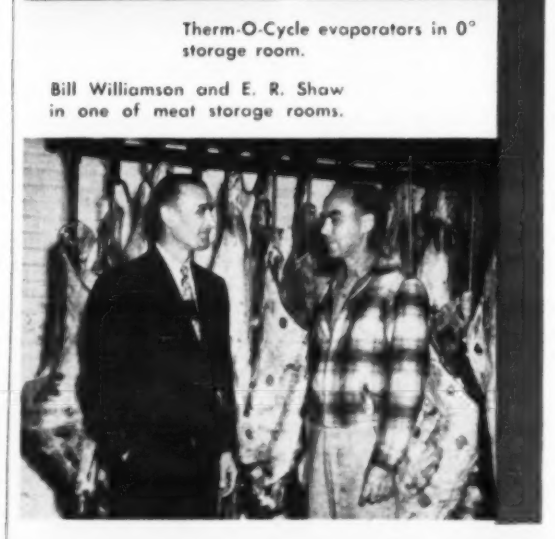
Protects produce in locker storage plant

New Williamson Locker Storage Plant addition, Walnut Creek, Calif. Installation made by E. R. Shaw of Walnut Creek, a Wm. Wurzbach Co. dealer.



Therm-O-Cycle evaporators in 0° storage room.

Bill Williamson and E. R. Shaw in one of meat storage rooms.



Bush Therm-O-Cycle . . . the modern refrigeration system, features simplified hot gas defrosting. Check these advantages:

- √ Room air passed over a re-evaporator coil furnishes the heat required for defrosting.
- √ Re-evaporator supplies unlimited amount of heat, yet requires no storage reservoirs, reboilers or other devices.
- √ Dependable, fully automatic operation.
- √ Simple installation; convenient servicing.
- √ Economical, frost-free evaporator operation.
- √ Minimum box temperature rise.

Bush Therm-O-Cycle system capacities range from 4,500 to 54,000 BTU/hr. Therm-O-Cycle systems are shipped complete and include evaporator, re-evaporator, heat interchanger, hot gas solenoid and strainer, timer and regulating valve.

Bulletin 525A, free upon request, contains latest data.

BUSH MANUFACTURING COMPANY

WEST HARTFORD 10, CONNECTICUT